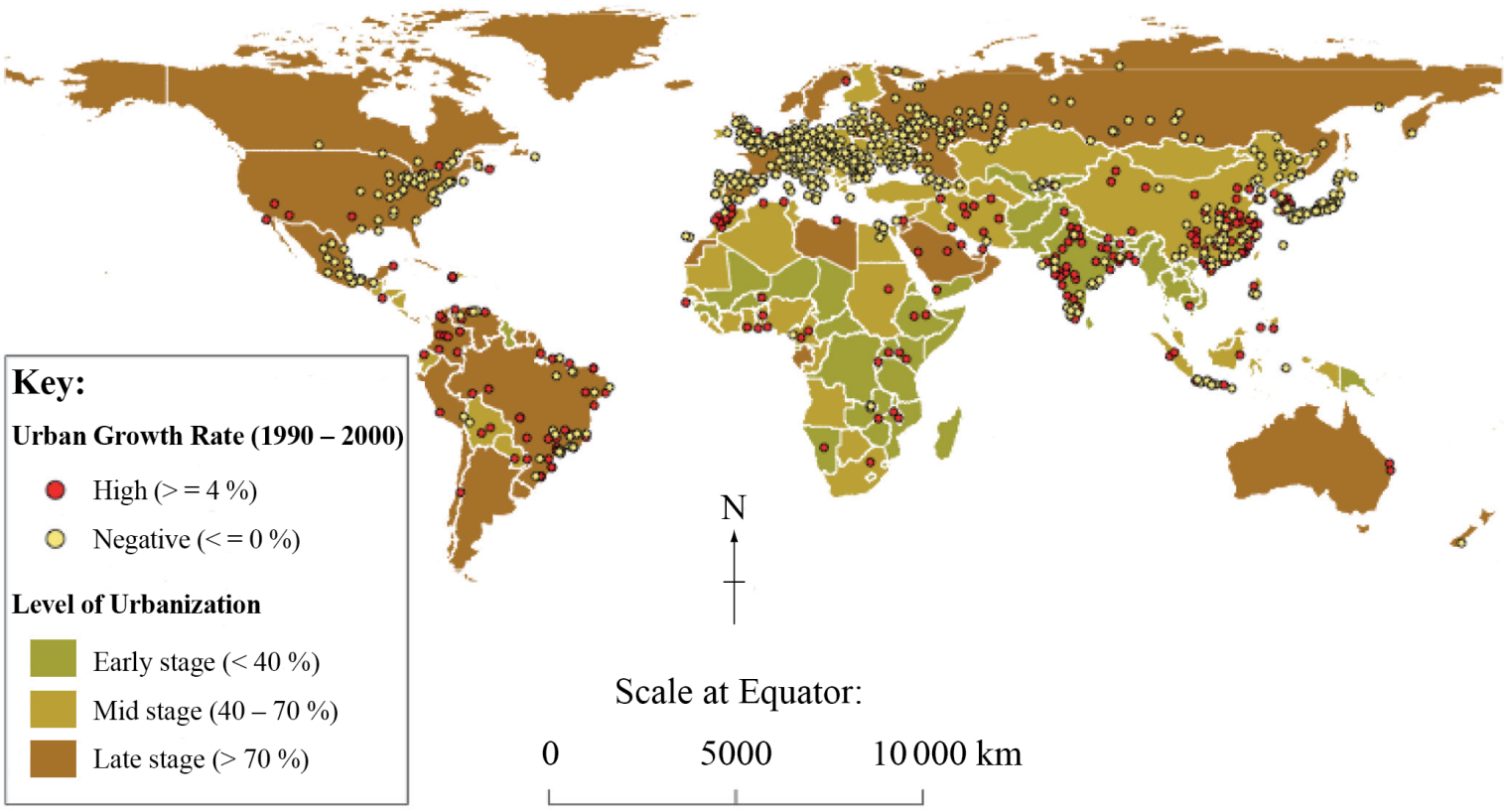
HL Paper 2

The map shows cities experiencing high or negative growth rates in countries with differing levels of urbanization.



[Source: UN HABITAT Global Urban Observatory]

a. Identify the **two** major components of urban growth. [2]

b. Referring to the map, describe the relationship between the level of urbanization and urban growth rate. [3]

c. Explain the pull factors associated with counter-urbanization. [5]

d. Discuss the challenges facing **one or more** cities experiencing rapid growth. [10]

Markscheme

a. Natural change [1 mark] and net migration [1 mark].

There may be alternative ways of expressing these two components/processes and these should be credited.

b. The level of urbanization and urban growth rate show a negative relationship (i.e. cities with high annual growth more likely to be found in countries at an early stage of urbanization or vice versa) [1 mark].

This can be exemplified through mention of specific countries or regions (e.g. the majority of cities with negative growth are found in Europe and North America) [1 mark].

For a third mark, either name or describe an anomaly (e.g. China and Brazil are anomalies because they contain significant numbers of cities with high and negative growth) or provide some quantification (e.g. making use of the urbanization percentages) [1 mark].

c. Counter-urbanization should be defined as a centrifugal movement / urban-rural movement (there may be other ways of expressing this) [1 mark].

   The remaining [4 marks] are available for identifying and explaining the pull factors such as perceived environmental/social quality, housing availability/costs, commuting potential, pursuit of specific employment opportunities, amongst others. Either two factors can be well-explained for full marks or a larger range in less detail.

d. Answers are expected to identify the negative consequences of high growth rates in urban areas (scale can vary from megacity to smaller cities).

   Expect references to problems with housing, utilities, services, employment, public health and communication infrastructure. These problems are in turn likely to have economic impacts, as well as environmental impacts.

   At bands E and F expect more than a list of problems. The scale of the challenges may be commented on, or the nature of rapid growth making it hard for city authorities to manage the growth successfully (and there may be links with the concept of sustainability).

   Marks should be allocated according to the markbands.

Examiners report

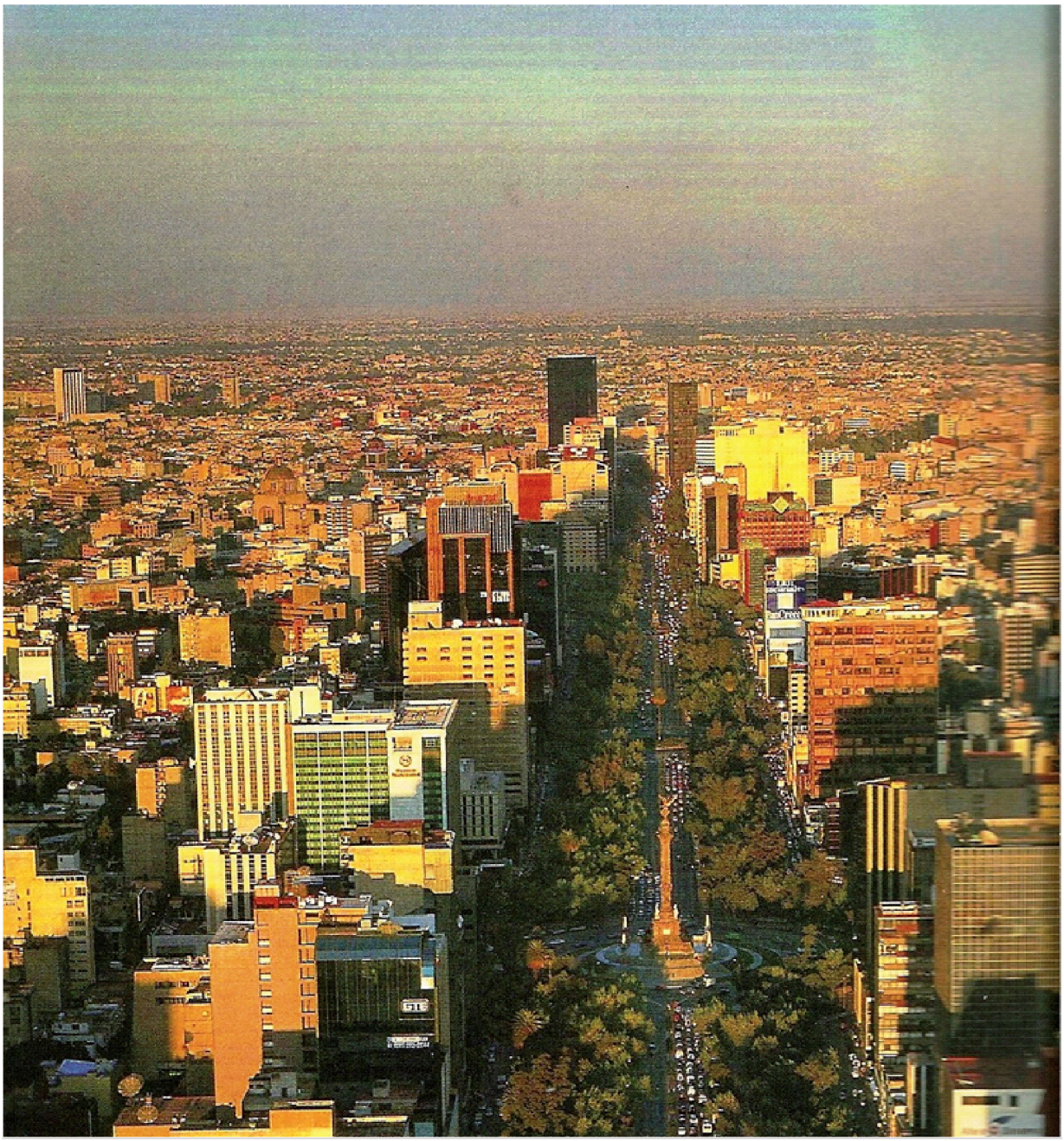
a. This was well attempted though some responses referred to urban area growth rather than population growth.

b. Well done, with most recognizing the negative correlation and able to provide exemplification and quantification or anomaly.

c. Some answers concentrated on urban push factors rather than rural pull factors.

d. Candidates had a good grasp of urban problems in rapidly growing cities and described them well but some could not resist answering with a problem-solution approach and were not always able to state the challenge, such as how to slow down rural-urban migration, or how to improve the quality of housing, simply describing how poor housing (for example, in favelas) was a problem.

The photograph shows Reforma Avenue, one of the most important streets in Mexico City.



[Source: Calderwood, M. In Cities and Society. Marsilio,2006]

a. Referring to evidence in the photograph, describe **two** types of environmental stress that are likely to affect the population of Mexico City. [2+2]

b. Identify **three** characteristics of Reforma Avenue that are likely to affect the urban microclimate and explain their effect. [6]

c. “Cities can never be sustainable.” Discuss this statement, referring to one case study. [10]

Markscheme

a. There are a number of possibilities, including air pollution, visible as an atmospheric haze creating poor visibility in the distance, vehicle noise and congestion.

b. A narrow sky view area restricts sunshine, a high density of buildings retains heat, tall buildings reduce general wind speed, but may focus winds, producing a canyon effect with higher wind gusts. The characteristics must be visible in the photo; a general explanation of the urban heat island is not acceptable.

c. Candidates may choose to either agree or disagree with the question, but stronger answers accessing bands E and F must address both sides of the argument. A good answer accessing band D and above must have case study support and is likely to refer not only to environmental, but also to social and/or economic aspects of management or mismanagement.

Environment: resource conservation, waste management, transport.

Social: housing, educational opportunities, political freedoms and equal opportunities, and local involvement in decision-making.

Economic: income security and employment diversity.

Marks should be allocated according to the markbands.

Examiners report

a. [N/A]
b. [N/A]
c. [N/A]

---

a. Describe what is meant by a “sustainable city”. [4]

b. Explain **three** ways in which human activities can modify the microclimate of an urban area. [3x2]

c. Examine reasons why cities in some parts of the world have higher rates of population growth than others. [10]

Markscheme

a. Answers could include the following elements:

A city that is designed to protect quality of life for its future generations [1 mark].

Award 3 marks for three of the following elements:

- city designed to minimize impact on environment
- inputs of energy, water, and other resources are minimized
- outputs (waste, air and water pollution) are minimized (possibly by recycling)
- effective transport infrastructure minimizes outputs
- smallest possible urban ecological footprint
- any other valid suggestion.

b. Microclimate can describe temperatures, wind speed, humidity, air quality and local rainfall regimes.

Answers could include the following:

- increased temperatures (including urban heat island effect) because of reduced albedo, direct heating by buildings, air conditioning etc.
- changes in wind speed and air flow because of buildings and street patterns
- changes in rainfall because of higher temperatures; increased amount of particulate pollution provide rainfall nuclei; greater convectional updraughts
- greater levels of air pollution (photochemical smog, particulates, NOX etc.)
- greater number of sources, for example, exhausts.

Award 1 mark for each basic modification explained and 1 mark for any extension or good example.

Maximum 3 marks if only one aspect of microclimate (for example, urban heat island) is explained but with three causes given.

c. Good answers are likely to focus on migration and natural increase also. Variations in the relative strength of urban pull factors and rural push factors should be discussed. Economic, cultural and political factors may feature in the discussion as influences of both migration and rates of increase.

Counter-urbanization and low birth rates are a cause of slower growth or even a decline in population in many cities in MEDCs.

Responses that focus simply on urban growth in one area should be limited to band D. Expect the inclusion of both migration and natural increase to access bands E/F.

While examples are not a specific requirement of the question, those answers that provide supporting examples are likely to access the higher markbands.

Marks should be allocated according to the markbands.

Examiners report

a. Sustainability seems to be well understood and most candidates gave a good response – many referred to the Roger's model and many provided annotated diagrams to illustrate it.

b. Surprisingly, overall, this was done quite poorly. Many referred to the greenhouse effect and there was considerable confusion over the causes of the urban heat island.

c. Some answers were excellent but many took an inappropriate scale (national population growth rather than urban) or did not consider natural increase as well as migration. The use of supporting examples made it easier for candidates to access higher markbands.

---

a.i. Describe **two** differences between a circular city system and a linear city system. [2]

a.ii. Outline how **one** transport management strategy can contribute to a circular city system. [2]

b. Explain **two** reasons for the location of retail activities in the central business district (CBD) of **one** city you have studied. [6]

c. Examine the consequences of the movements of different socio-economic groups within a city. [10]

Markscheme

a.i. *Award **[1]** for each valid difference.*

Possibilities include:

- circular is (more) sustainable, linear is less sustainable **[1]**
- circular city system has smaller inputs of fossil fuels, water and products than a linear system [1]
- circular city system has smaller outputs than a linear system **[1]**
- circular city system has more recycling, re-use and reduction in inputs than a linear system **[1]**.

a.ii. *Award **[1]** for a brief description of a transport management strategy and **[1]** for outlining its contribution to the city system dynamic,*

eg inputs/outputs.

For example: Increased public transport reduces the number of cars on the road **[1]** and therefore reduces energy inputs/atmospheric outputs **[1]** from the city.

b. *In each case, award **[1]** for a valid reason and a further **[2]** for the development of that reason.*

For example: In Central, the CBD of Hong Kong, retailing is located where public transport links converge **[1]**. It is a zone of high accessibility for workers and consumers **[1]**, enabling stores to exceed their threshold population **[1]**.

Other reasons could include:

- land values
- prestige of location
- planning regulations
- city centre redevelopment schemes.

c. There are many consequences of socio-economic groups moving into/out of different parts of a city. These include gentrification, suburbanization, reurbanization, commuting and relocation of selected populations. Do not accept rural–urban migration, as this is not a movement within a city.

Gentrification refers to the movement of higher socio-economic groups into inner city areas. Impacts can be positive, *eg* increase in house price, improvement of housing by owners, the growth of services, but can also be negative, *eg* forcing local residents to leave an area, housing becoming unaffordable for local people, *etc*. Relocation of people may occur due to planning or for major events such as the Olympic Games. Generally, it is the poor who are moved further away from areas of economic activity.

Good answers may examine a structured range of positive and negative impacts (impacts could be for people, places, the environment, *etc*). Another approach might be to examine different timescales for movement processes (commuting, temporary movement, *eg* students, permanent relocation). Another approach might be to compare the dominant type of movement seen in HICs, NICs and LICs.

At Band D, expect a description of one movement of socio-economic groups.

At Band E, expect either a more detailed explanation of one or more movements of socio-economic groups in different parts of a city or an examination of the impacts of such movements on different parts of a city.

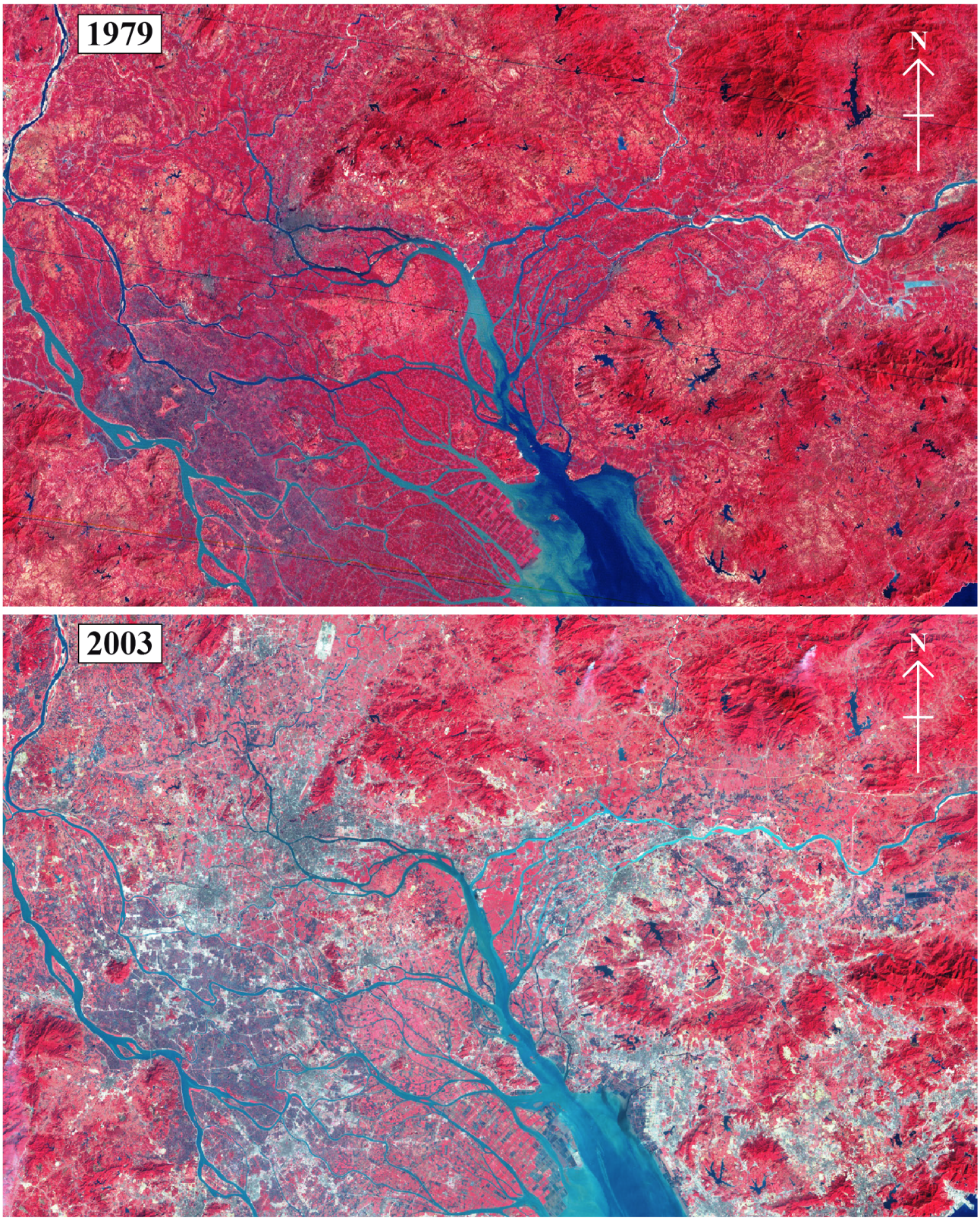
At Band F expect both.

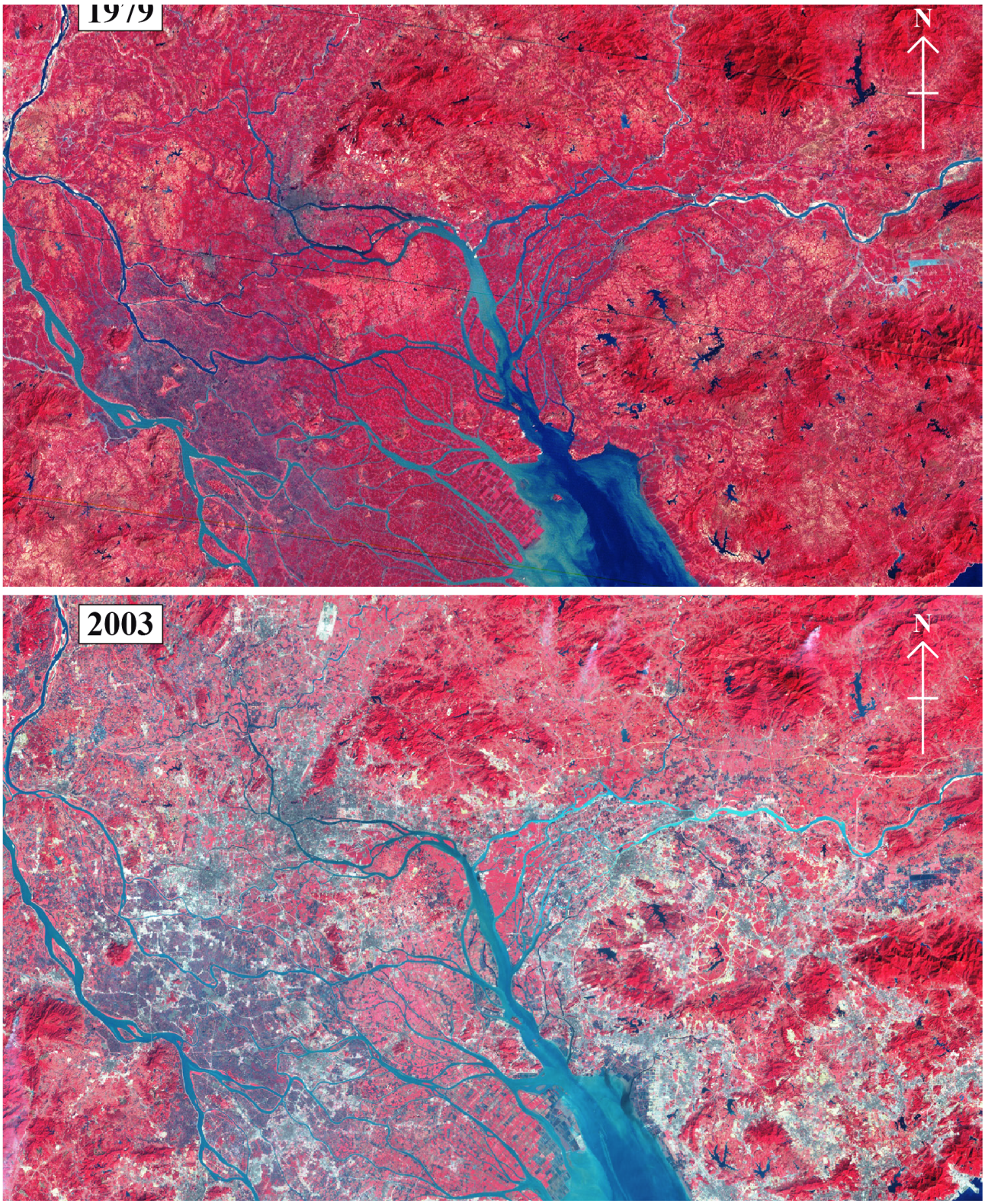
Marks should be allocated according to the Paper 2 HL and SL markbands.

Examiners report

a.i. [N/A]
a.ii. [N/A]
b. [N/A]
c. [N/A]

The false-colour satellite images compare the Pearl River Delta in southern China in 1979 and 2003.


1979
N
2003
N
Key:
Vegetation
Water
Shallow/sediment laden water
Buildings and paved surfaces
0
25 km



[Source: First image: Jesse Allen, 1979, Landsat 3 MSS, pearlriver_l3_1979292, GLCF, Maryland, 2012; Second image: Jesse Allen, 2003, Landsat 7 ETM+, pearlriver_l7_2003010, GLCF, Maryland, 2012]

a. Describe the pattern of urban growth since 1979. [4]

b. Suggest **three** reasons for the rapid growth of some cities. [2+2+

c. Examine the factors that determine the socio-economic characteristics and location of residential areas within cities. [10]

Markscheme

a. There is a significantly more urbanized area in 2003 compared to 1979.

In 1979 the main urban area was close to the river and since then has grown into the floodplain. In 2003 the floodplain/lower land has been occupied by urban development. The urban area now extends further north and has increased significantly in the eastern part of the region shown. The urban development is more dense in 2003 as shown by the change in colour. More urban roads/communication are evident in 2003. Award 1 mark for each valid point to a maximum of 4 marks.

b. Suggestions might include rural-urban migration, development of industry/economic development, increased employment opportunities, government policies, increased quality of life in urban areas, improved communication links, increased mechanization and loss of employment in rural areas, natural population increase. Three distinct, developed suggestions should be provided for up to 2 marks each.

c. Socio-economic characteristics include demographic, political, social and economic factors, but it is not necessary for candidates to consider all of these in equal depth.

The factors affecting the socio-economic characteristics and location of residential areas include: history (age, quality of buildings); physical geography (geology, drainage, and relief may mean that higher class buildings are built in less hazardous locations); accessibility and transport links; the location of industrial and commercial areas; wealth, ethnicity and family status; the relative importance of urban processes such as suburbanization, urban sprawl, counter-urbanization, gentrification and rural-urban migration; as well as natural population increase. This is not a complete list, and other factors may be equally important, depending on the city or cities in question.

The location of residential areas within a city may be different in economically poor countries than in richer countries. For example (numerous exceptions aside), the central areas of rich cities may have poor quality housing (inner-city slums), whereas the poorest residential areas in poor cities often tend to be found on the city fringe (shanty towns).

Maps or diagrams may substitute for text.

To reach markbands E/F, candidates should examine a range of factors, and offer sufficient depth by way of data, maps, examples or case studies to demonstrate a sound understanding of the topic. It is not necessary for candidates to examine all of the factors mentioned in order to obtain full marks.

Marks should be allocated according to the markbands.

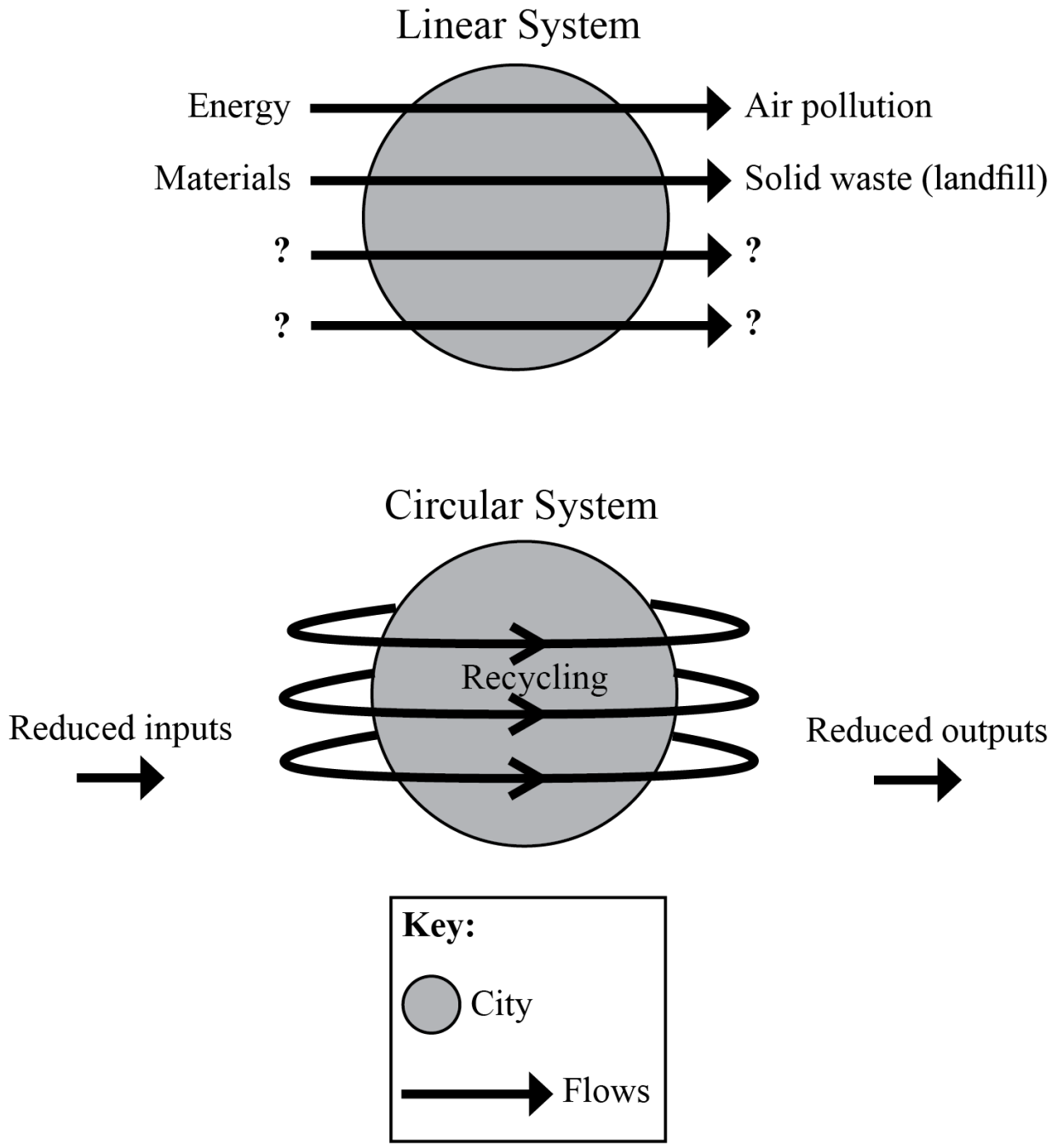
Examiners report

a. Few responses were convincing, but most scored some marks.

b. There were some solid answers to this question.

c. Many candidates found it difficult to structure their responses to this question, with weaker ones incorporating urban models that added relatively little of value to their response. There was more development of the location of residential areas by most candidates than of the areas' socio-economic characteristics.

The diagram shows two contrasting city systems.



[Source: adapted from www.dep.org.uk/scities/rationale/whylearn.php]

a. Identify **two** possible additional inputs and two possible additional outputs for the linear system. [4]

b. Explain why the circular system has a reduced urban ecological footprint. [6]

c. Examine the dominant population movements and their consequences for **one or more** urban areas. [10]

Markscheme

a. Inputs: water, land, timber, food. 1 mark for each. Do not credit “resources”.

Outputs: sewage/water waste, water pollution, industrial waste. 1 mark for each. Do not credit “waste”.

Accept other valid suggestions.

b. Credit understanding of “urban ecological footprint”, defined as the amount of land required [1 mark] to provide the resources the city needs [1 mark] and to dispose of waste produced by residents and businesses of the urban area [1 mark].

Specific ways of achieving this include:

- Circular system has reduced inputs and outputs, thus requiring less land to provide resources and to dispose of or mitigate waste products.
- Less energy is required to transport resources and waste materials.
- Increased recycling allows for reduction in both inputs and outputs.

There may be other valid responses.

c. Dominant population movements are likely to be either centrifugal or centripetal. These have a range of impacts on land use patterns and social, economic and environmental conditions in cities.

Centrifugal (moving out): suburbanization and counter-urbanization may cause increased urban sprawl and consumption of surrounding fertile land, increased journey times and therefore traffic congestion and associated pollution. The associated spiral of decline in central urban areas may be discussed – lack of investment in the physical environment including housing stock, loss of retail activity to meet customer location, in-migration of minority groups, increased unemployment and crime.

Centripetal (movement into the city and re-urbanization): caused by the “gravity” of the city. Consequences include rapidly increasing population and therefore demands for housing, services and resources including water. Housing needs met by unplanned settlement and overcrowding of existing housing stock. Pressure on services such as water, health, refuse disposal and education increases, leading to significant unmet demand. Despite these factors, migrants may experience increased opportunity and standard of living leading to permanence.

Responses could either focus on only one movement and its consequences or could contrast movements in different locations. Answers should refer to at least one specific example.

Responses that describe the dominant movement(s) and discuss a range of associated consequences are likely to reach bands E/F.

Marks should be allocated according to the markbands.

Examiners report

a. This was often poorly done at both levels and surprisingly few gained full marks.

b. Many answers did not make clear the relationship between a circular system and the ecological footprint due to weak understanding of the latter term.

c. Answers tended to be mediocre, with many weaker responses choosing to discuss only rural–urban migration and ignoring movements such as counter-urbanization, suburbanization and their impacts.

---

a(i). Define the term *megacity*. [1]

a(ii). Explain **two** processes responsible for population growth in megacities. [4]

b. Using **only** an annotated diagram, explain the operation of a sustainable urban system. [5]

c. Examine the effects of human activity on the climate of urban areas. [10]

Markscheme

a(i). A city with a population of more than 10 million people ***[1 mark].***

a(ii) Award ***[1 mark]*** for each of two valid processes such as natural increase, in-migration, and boundary redefinition (urban sprawl) and ***[1 mark]*** for the explanation of the process. Natural increase occurs when crude birth rates exceed crude death rates where a youthful population structure exists. In-migration can be from rural or urban areas, or from other countries. Boundary redefinition may cause the megacity to expand and engulf surrounding settlements.

b. Sustainable urban systems have a circular system where inputs (energy, water, people, materials, products, food) are reduced and outputs (solid, atmospheric and liquid waste) are recycled.

Explanations without a diagram can achieve a maximum of ***[2 marks].***

Explanations that separate the diagram from the text can achieve a maximum of ***[3 marks].***

c. The examination could compare different types of urban area or address a range of climatic effects.

The effects of human activity include the creation of an urban heat island, reduced visibility, air quality such as increased incidence of smog, increased thunder storm activity and rainfall, reduced likelihood of snow and frost, increased gustiness, reduced average wind speed, changes to humidity.

Urban heat islands are formed under high pressure conditions, especially in winter and are most clearly evident at the end of night. Sources of heating include energy generation, industry, transport, buildings, appliances and people. Because of higher temperatures, relative humidity will be lower.

Reduced visibility and air quality are caused by an increase in atmospheric pollutants in urban areas (dust, aerosols, and NO_x and SO_2, O_3, particulate matter). This leads to a greater incidence of fog and smog (polluted fog).

Thunderstorms are most likely due to the additional heat found in urban areas, resulting in more convectional activity. For the same reason, snow and frost are less likely in urban areas.

Rainfall is sometimes higher because there are more hygroscopic nuclei. However, the extra heat means that the air can hold more moisture before dew point is reached and condensation occurs.

Winds may be channelled along “canyons” causing an increase in “gusty” conditions. Buildings create more turbulence. Overall wind speeds are likely to be reduced due to the increased friction with buildings in urban area compared with open spaces in rural locations.

To achieve band D a link should be made between human activity and the climate of urban areas. At least two effects should be explained.

Bands E and F require a structured examination of either a range of climatic effects or different urban environments.

Marks should be allocated according to the markbands.

Examiners report

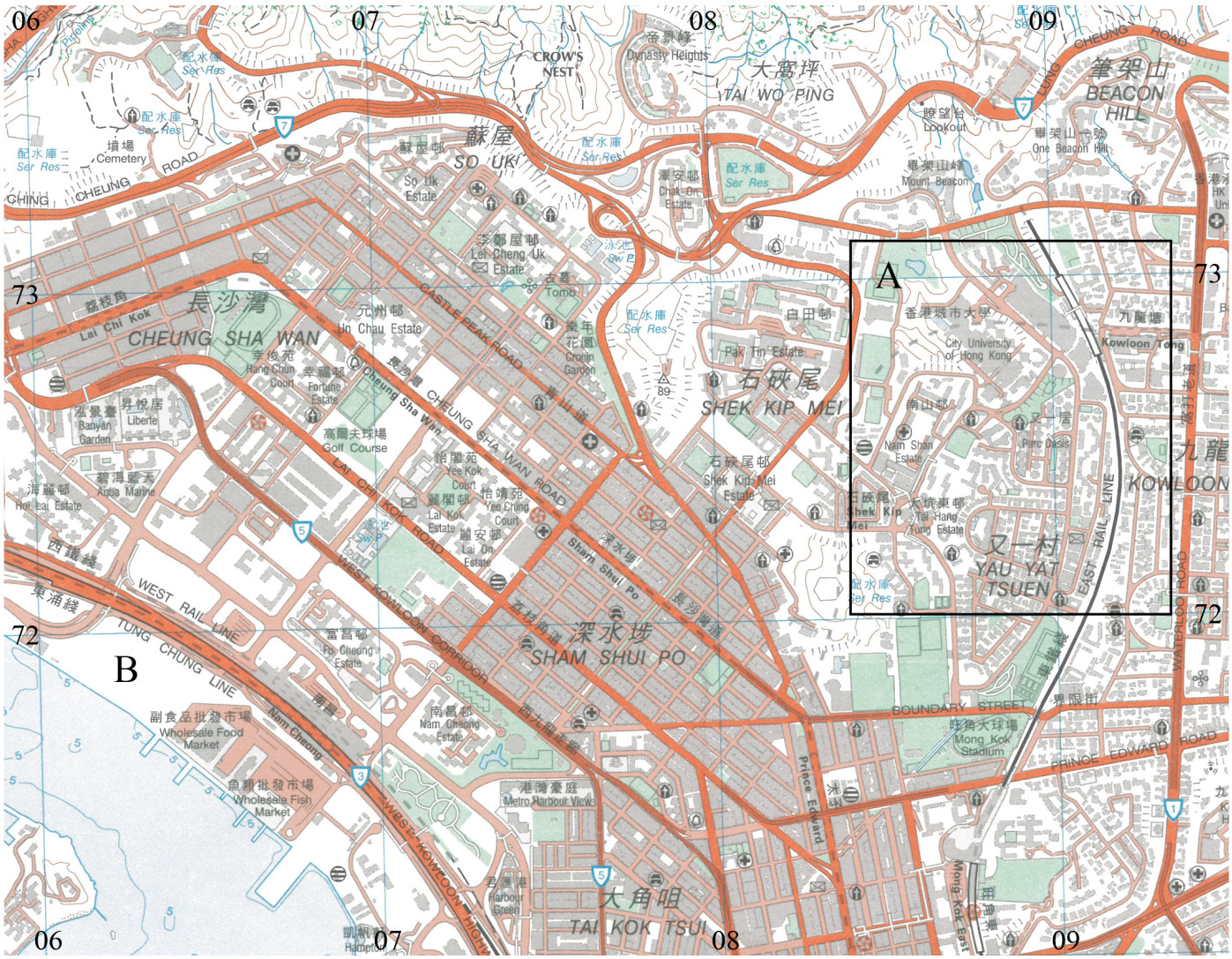
a(i) Almost all correctly indicated 10 million. Most candidates used relevant processes, but not all developed their answers. Some used gentrification as a process.

a(ii) Almost all correctly indicated 10 million. Most candidates used relevant processes, but not all developed their answers. Some used gentrification as a process.

b. Many candidates found difficulty with drawing an annotated diagram, and many diagrams were poorly drawn and very simplistic. Some candidates drew pictures rather than systems diagrams. Others seemed to have never heard of a sustainable urban system.

c. There were some excellent answers on urban climates, with detailed case studies. However, they did tend to be descriptive rather than examining the effects of human activity. Many candidates did not get beyond the urban heat island, and the nature of smog related pollution was often poorly understood. A large proportion of candidates wrote about how urban life can impact on climate change.

The map shows part of a city in Asia. The scale of the map is 1 : 20 000. The contour interval is 20 metres.



Scale:

500 0 1000 2000 metres

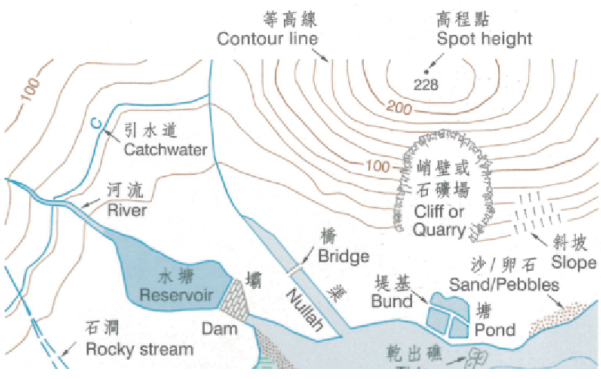
N

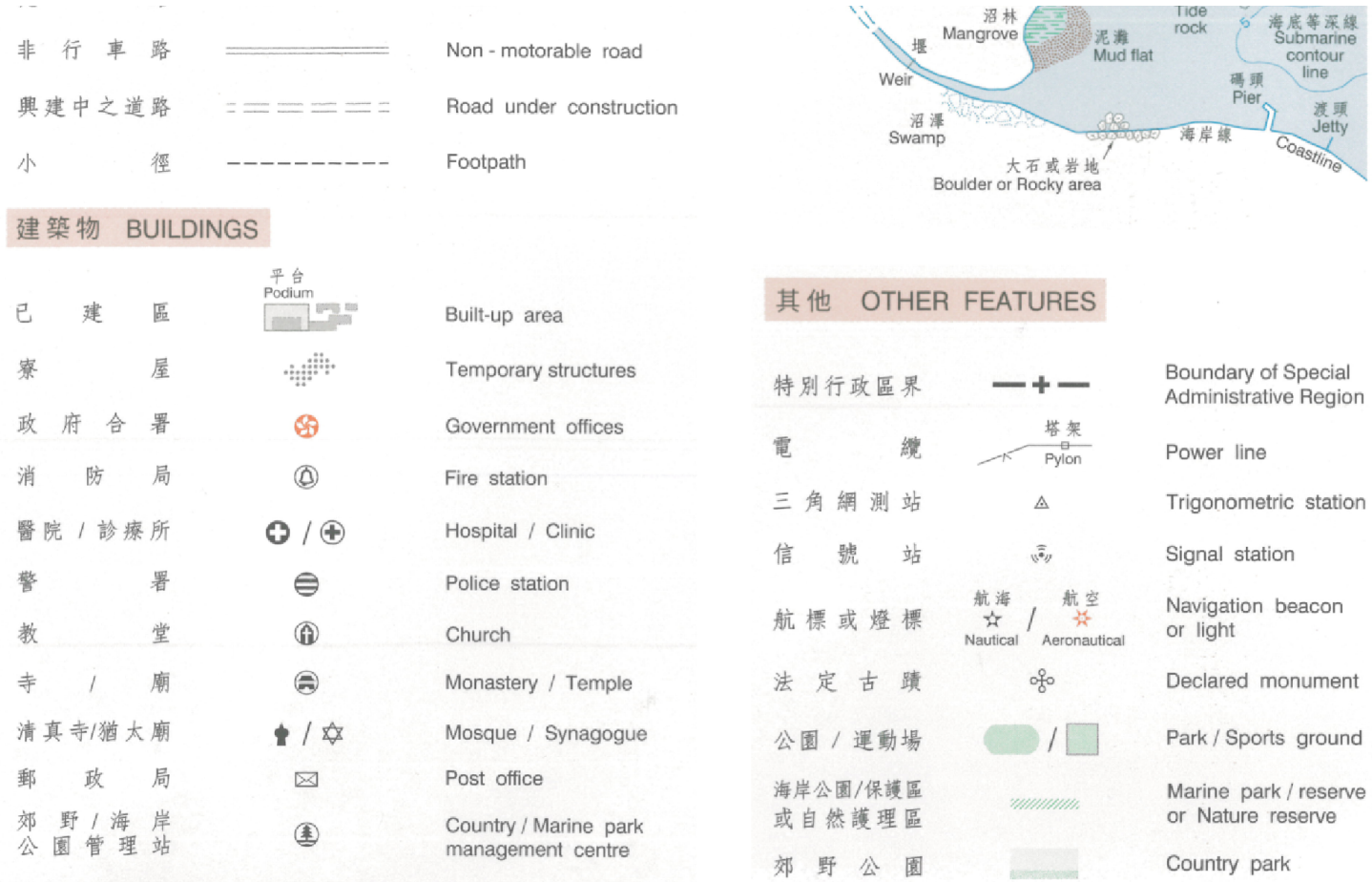
Key/Legend for map:

鐵路及道路 RAILWAY & ROADS

鐵路及車站	地底 Underground	Railway & Station
快速公路	幹線編號 Route number	Expressway
公路主線		Main road
高架道路		Elevated road
公路支線		Secondary road
雙線	行人橋 Footbridge	Double width
單線	R 限制通道 Restricted access	Single width
泥路		Track

地形及水文要素 TOPOGRAPHIC & HYDROGRAPHIC FEATURES





[Source: Survey and Mapping Office, Lands Department, *Hong Kong Island and Kowloon*, HM20C Series, Edition 14, Sheet 11, (2009). The map reproduced with permission of the Director of Lands. © The Government of Hong Kong SAR. Licence No. 62/2011]

a. Using map evidence, describe **two** characteristics of Area A which suggest it is a high-class residential area. [2+2]

b. Using map evidence, suggest **three** reasons why Area B may be a suitable location for a manufacturing activity. [2+2+

c. With reference to **one** named example, evaluate the success of a strategy designed to manage pollution in an urban area. [10]

Markscheme

a. Possible answers include open space/landscaping, size and density of housing/buildings, curved/well-planned streets, cul-de-sacs or no-through streets, university, public transport access, lack of negatives (e.g.industry). Candidates should be awarded [1 mark] for each identified characteristic and [1 mark] for further description, brief justification/reasoning.

b. The area has excellent transport links and a container port, providing ease of access and import/export, proximity to coast/road/highway, proximity to residential areas for labour supply, open space / room for expansion, possibly lower cost land (perhaps reclaimed, flood risk, etc.). These may be possible brownfield sites that are suitable for development.

   Candidates should be awarded [1 mark] for each identified reason and [1 mark] for a brief explanation, provided some mention is made of map evidence (grid reference, names, directions, distances etc.).

c. The type of pollution depends upon the case study chosen, but it should be a case study of urban pollution (as opposed to any pollution event). Strategies discussed may include water treatment and infrastructure, transport strategies, legislation, planning strategies etc.

   The response should explicitly outline the strategy adopted to manage the pollution, with reference to specific names and locations.

   Responses should provide a clear evaluation of the management strategy rather than simple description. Responses that are limited to description or do not make reference to a specific case study should not progress beyond band D.

   Marks should be allocated according to the markbands.

Examiners report

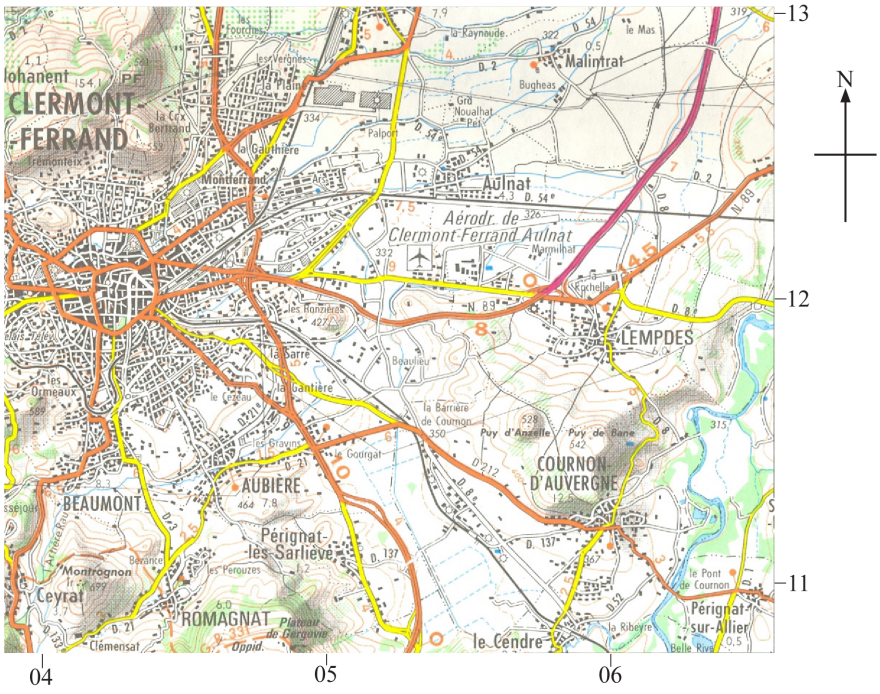
a. Most candidates were able to identify factors such as the amount of green space or the configuration of the street patterns but did not refer to named areas on the map. There remained problems with topographic map interpretation and referencing map evidence.

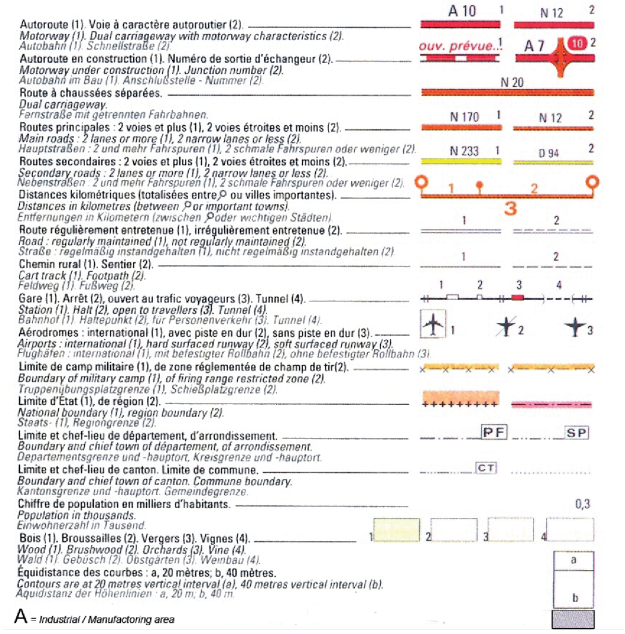
b. Most candidates were able to identify factors such as the amount of green space or the configuration of the street patterns but did not refer to named areas on the map, though most were able to identify three reasons for manufacturing location in area B relatively easily. There remained problems with topographic map interpretation and referencing map evidence.

c. Many used many strategies for one urban example and generally these were credited. A popular case study was the public transport developments in Curitiba in Brazil which were often described at length but whose relationship to reduced urban pollution was frequently ignored. The best answers concentrated on one urban area and one detailed, well-evaluated strategy. Those that included too many strategies could not produce an in-depth answer.

The maps show Clermont-Ferrand in France in 1979 and 2003.

Map 1: In 1979

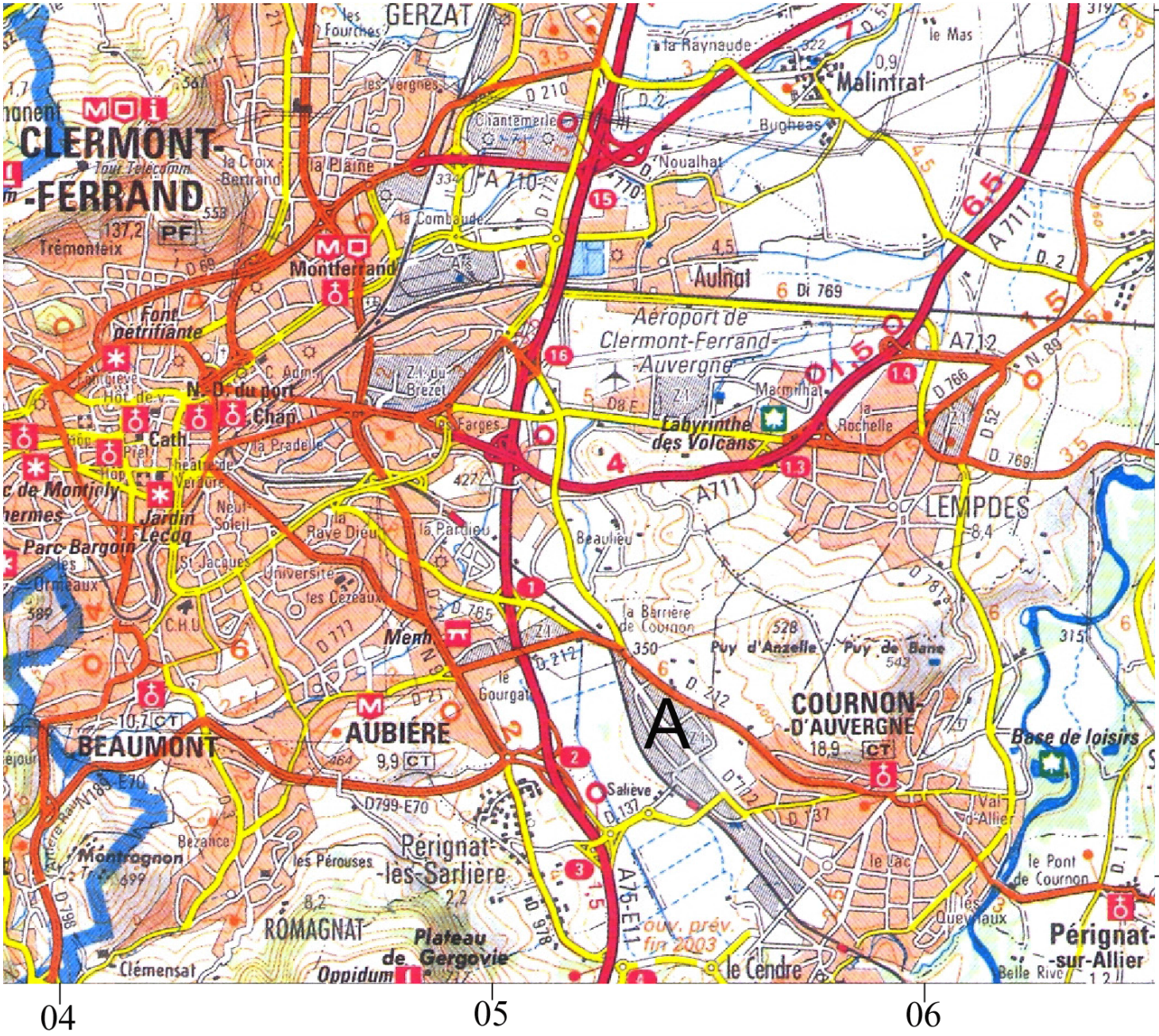




SCALE FOR MAPS 1 : 100 000

[Source: Extract from a map of Clermont-Ferrand produced by IGN (1979)]

Map 2: In 2003



[Source: Extract from a map of Clermont-Ferrand produced by IGN (2003)]

ai. Define the term suburbanization. [2]

aii. Referring to map evidence, briefly describe **two** processes, excluding suburbanization, that have led to the growth of Lempdes. [2]

b. Referring to map evidence, suggest **three** reasons why an area of manufacturing has developed at point A (054113) on the 2003 map. [6]

c. Examine the pattern of urban deprivation in a city of your choice. [10]

Markscheme

ai. Suburbanization is the process of outward growth of towns and cities [1 mark] to engulf surrounding villages and rural areas [1 mark].

aii. Towns such as Lempdes show considerable growth. Possible processes include migration, counter-urbanization, natural increase, decentralization, urban sprawl. Award 1 mark for each correct answer.

b. Several factors may have been responsible for an area of manufacturing developing in this zone. Evidence from the map should be given to support statements made. The advantages of site A include access to the airport and autoroute for deliveries and distribution, relatively cheap land, flat land for easy building construction and nearby labour pools in Cournon and Clermont-Ferrand.

Award 2 marks for each of three reasons.

c. Deprivation should be defined and its pattern examined. A well-drawn, annotated map may substitute for text. The pattern must be clearly described. The factors influencing the pattern will depend on the case study chosen. Likely factors might include residence choices made by affluent members of the city population, topography, climate, prevailing winds, accessibility, communication lines, government policy (zoning), family and ethnic ties, and location of twilight zones. Other valid reasons or approaches may be equally acceptable.

Marks should be allocated according to the markbands.

Examiners report

ai. [N/A]
aii. [N/A]
b. [N/A]
c. [N/A]

---

b. Explain **two** strengths **and one** weakness of **one named** city's attempt to reduce urban pollution. [6]

c. Examine the effects of the movement of economic activity to derelict land such as brownfield sites. [10]

Markscheme

b. *Award **[1]** for each strength/weakness and a **[1]** for further development/exemplification of each*.

Responses may focus on air pollution but could also focus on water, soil, noise pollution, or waste and litter problems in urban areas.

In awarding marks – there is no mark for the strategy (*eg* planting trees), but **[1]** for each strength/weakness and **[1]** for development.

For example: *Strength*: In Beijing the planting of trees has reduced pollution by intercepting dust **[1]** and provided shade for cyclists **[1]**.

Weakness: Replacing buses and old taxis was expensive **[1]** and there were economic losses when factories were closed **[1]**.

Other strategies may include:

• public transport
• bus lanes
• cycle lanes
• subsidies for public transport
• mass transport schemes.

*Award maximum **[4]** if no city named*.

c. Economic activity includes retailing, services and manufacturing. This includes new economic activity and relocated economic activity.

Derelict sites and brownfield sites include abandoned and under-used industrial buildings and land that may be contaminated but has potential for redevelopment.

The movement of economic activity to derelict land may have many positive effects, such as job creation, investment in infrastructure, new buildings and services, increased tax base and spending in the local area (positive multiplier effect), in-migration of wealthy, young people (gentrification), *etc*.

Negative impacts include an increase in congestion and pollution related to construction (short-term), increasing land prices, increasing social inequalities, cost of cleaning contaminated land/making it safe for use for economic activity.

Good answers will show an understanding that there are positive and negative impacts occurring. Some developments may be large-scale (*eg* London 2012 Olympic Site) while others are small-scale (gentrification in Woodstock, Cape Town). Some impacts may be short-term, others long-term. The overall effects may depend on the city involved, the amount of government investment, the amount of private investment, its accessibility, the type of economic activity.

At band D, expect a description of some effects of the movement of economic activity to derelict land/ brownfield sites.

At band E, expect either a detailed explanation of the movement of economic activity to derelict land/ brownfield sites or a structured examination of different kinds of impact (may include different perspectives) and any interrelations between them.

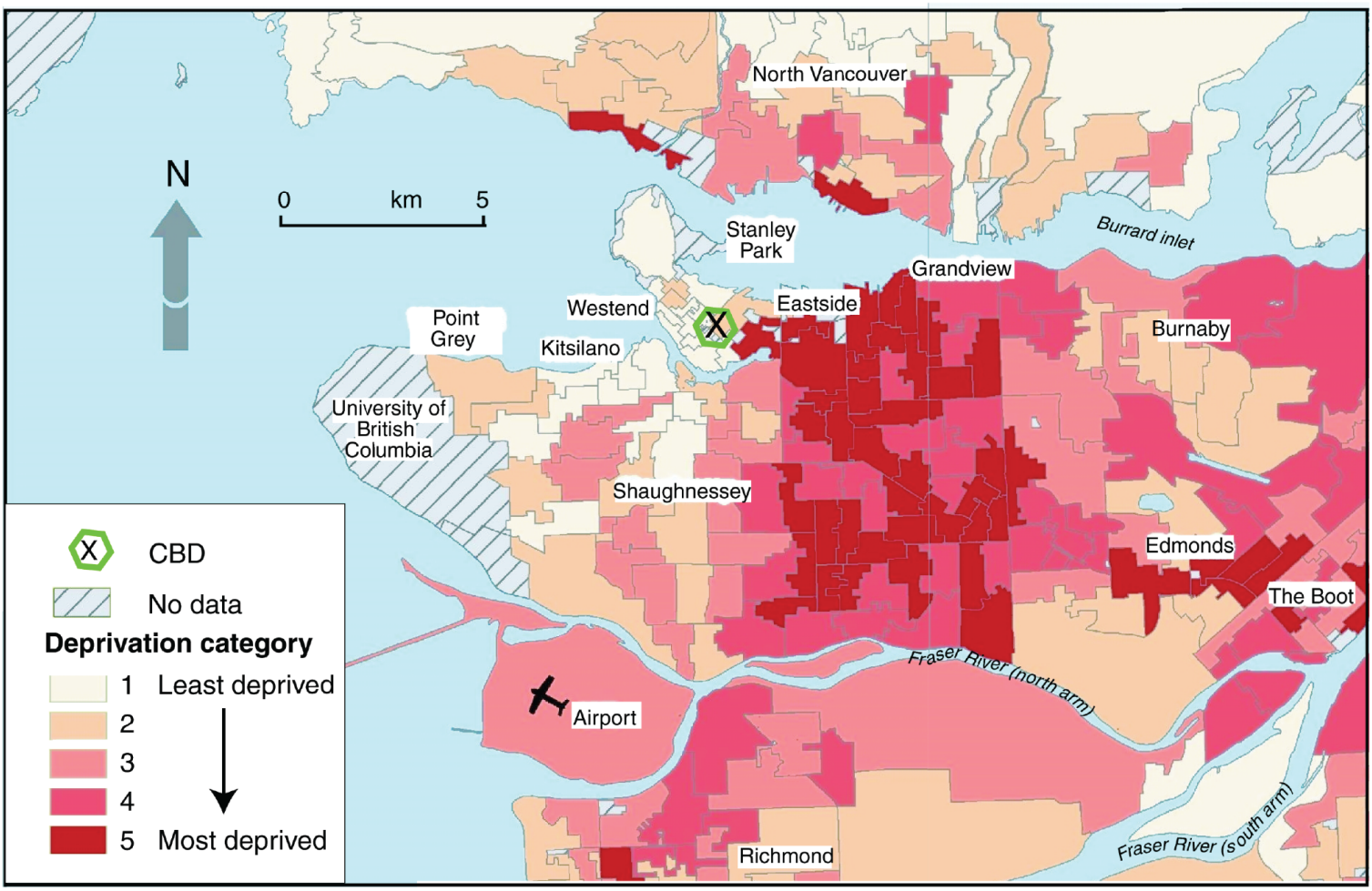
At band F, expect both of these elements.

Marks should be allocated according to the markbands.

Examiners report

b. [N/A]
c. [N/A]

The map shows the pattern of deprivation for Vancouver, one of Canada's wealthiest cities.



[Source: Springer and the *Journal of Urban Health*, volume 84, 2007, 591-603, 'Deprivation indices, population health and geography: an evaluation of the spatial effectiveness of indices at multiple scales', Nadine Schuurman, Nathaniel Bell, James R Dunn and Lisa Oliver, no 4, with kind permission from Springer Science+Business Media B.V..]

a. Describe the pattern of deprivation shown on the map. [3]

b. Explain how and why the pattern of deprivation might differ for a city in a low income country. [2+5]

c. Evaluate **one or more** sustainable strategies designed to improve life in urban areas. [10]

Markscheme

a. Points made for 1 mark each could include:

The two largest areas of "most deprived" (category 5) is south of Eastside and Grandview, stretching as far as the north arm of the Fraser River. The northern part of this area (Eastside) borders the CBD. The largest areas of "least deprived" (category 1) are Westend, Kitsilano and Shaughnessey. Parts of North Vancouver, Edmonds and Richmond also stand out as having relatively little deprivation (category 2). In general, despite exceptions, areas towards the edge of the city tend to be less deprived than areas in the centre of the map.

Award 1 mark for each valid point. Some place names must be included for the awarding of the full 3 marks.

b. Responses are expected to compare patterns of deprivation found in a city that is less developed than Vancouver, Canada. Accept any reasonable interpretation, including NICs.

Responses should clearly include an explanation of how the pattern would differ for a maximum of 2 marks. The most likely responses include:

- Least deprived areas are more likely to be found in central areas, and more deprived areas nearer the urban fringe (reversal) [1 mark].
- Transport lines could lead to the formation of linear belts of deprivation [1 mark].
- It may be less easy to identify a pattern – more likely to respond to local factors than comply to a pattern, for example, slums also in/around CBD [1 mark].

Candidates are expected to offer at least two developed explanations for the differences identified, up to a maximum of 3 marks for any one idea, although a wider range of shorter explanations is also acceptable.

Reasons why the pattern may differ include:

- Centripetal forces attract population to the city in contrast to the centrifugal forces in most cities in rich countries – levels of deprivation are therefore likely to be higher.
- Land available for housing development by growing population is found at urban fringe (where claims to ownership may not have been formally expressed).
- Poor transport infrastructure means land close to the commercial centre is valued highly by high-income groups meaning that less deprivation is found there.
- Lack of planning and governance leads to a more informal and pragmatic approach to development, making it harder to identify overall patterns.

An annotated sketch map may substitute for text.

c. The sustainable strategy chosen is likely to be one that addresses either a social issue (housing quality), environmental issue (air, water, land resources) or overall city growth (and in-migration) – in ways that seek to maintain and improve the quality of life for current and future urban dwellers.

Responses should go beyond mere description of a management strategy. Answers should provide effective evaluation, addressing both positive and negative aspects of the strategy, the problems encountered and some conclusion on the success of the scheme. Answers that do all of this will access bands E/F.

Answers that evaluate an urban management strategy that is not explicitly sustainable (does not mention future generations or ecological footprints etc.) should be limited to band D.

Marks should be allocated according to the markbands.

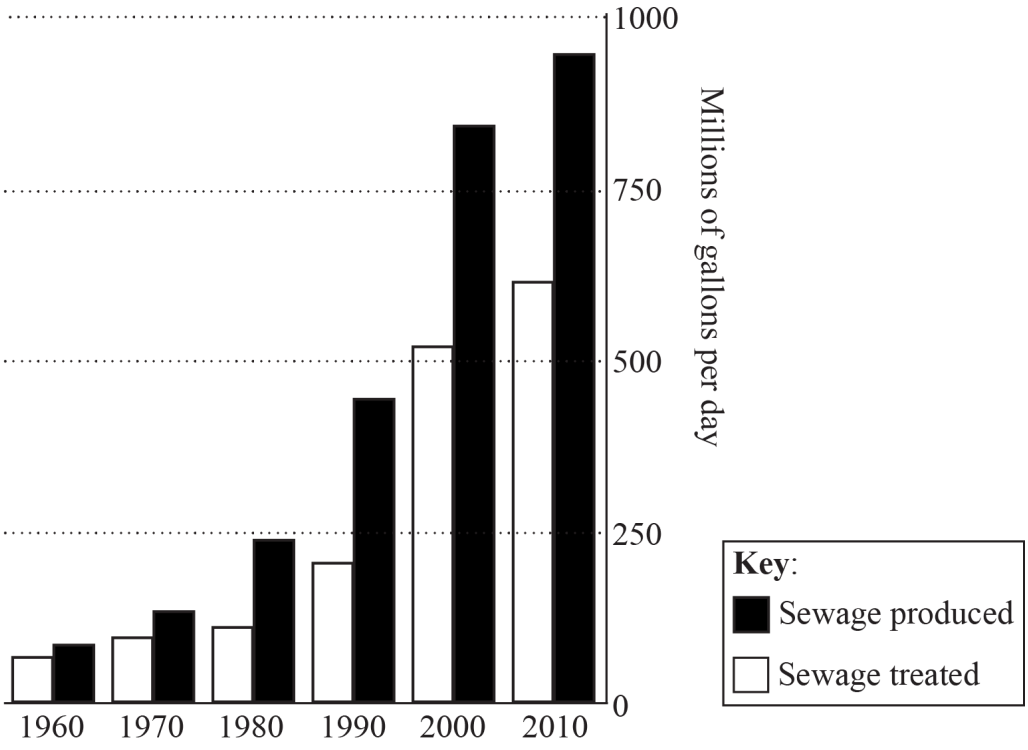
Examiners report

a. This was usually well answered though the most common error was not to refer to places named on the map.

b. This was usually disappointing, with few able to concentrate on "pattern".

c. Most answers simply explained the existence of squatter settlements without referring to areas of high and low deprivation and their relative locations in a city in a low-income country. There were some good answers, though at both levels, many were overly descriptive and had only very limited evaluation. Frequently, relevant strategies were detailed without saying how they related to sustainability.

The graph shows changes in the amount of sewage produced and treated in a rapidly growing megacity.



[Source: adapted from http://www.nytimes.com/imagepages/2006/09/29/world/20060929_WATER_GRAPHIC.html]

a. Describe the trends shown in the graph. [4]

b. Explain **three** symptoms of urban stress. [3x2]

c. “Urban poverty and deprivation are widespread in all cities.” Discuss this statement. [10]

Markscheme

a.
- The amount of sewage produced and treated both increase
- Sewage produced has increased at a faster rate than sewage treated
- Rate of growth has slowed since 2000
- Biggest increase between 1990 and 2000 in sewage produced and sewage treated
- Provides quantification.

Award 1 mark for each valid point. Quantification is needed for the award of the full 4 marks.

b. Urban stress is considered to be the inability of the urban system to cope with the demands of its population (either because of its size or its consumption).

Possible symptoms of urban stress could be:

- pollution (air or water) beyond acceptable levels, for example, photochemical smog
- widespread poverty, beyond ability of city authorities to provide social care
- lack of adequate housing evidenced by high levels of homelessness or informal housing
- inability of health services to cope with demands
- possible outbreaks of epidemic disease
- high levels of civil unrest or crime levels
- widespread traffic congestion or poor transport infrastructure.

Answers referring to physiological stress symptoms should not be credited.

1 mark should be awarded for each valid symptom of actual stress with 1 mark for a more developed explanation or elaboration. Maximum 2 marks for a simple list of problems (for example, unemployment, pollution, etc.).

c. Answers could approach the question in several valid ways.

A starting approach is to examine differences in poverty and deprivation within one urban area. This approach could argue that it is widespread in the chosen example and agree with the statement – this is sufficient for band D if well exemplified. An answer that shows that it is not widespread in a single city, and therefore disagrees with the statement could reach bands E/F.

Another approach is to look at contrasting urban areas and examine differences in poverty and deprivation between cities. This approach would most likely show that poverty and deprivation are more widespread in some cities than others. Such responses are also likely to reach bands E/F if they are detailed.

Marks should be allocated according to the markbands.

Examiners report

a. Generally very well done with accurate manipulation of data.

b. Surprisingly poorly done – many were able to list appropriate symptoms but explanations tended to be lacking or generalized. At standard level a number of responses incorrectly referred to the causes of urban growth or urban sprawl.

c. Relatively well done with good support. At the top end answers were excellent. At the lower end, answers were highly generalized with a lack of supporting examples and no real focus. The better responses were able to identify that poverty and deprivation occurs in cities in developed nations as well as in cities in less economically developed nations and were able to refer to affected locations in these cities.

The table shows the 21 megacities in the world in 2010 and their predicted rate of population growth between 2010 and 2025.

Rank	Megacity	Country	% change in population 2010–2025
1	Tokyo	Japan	1
2	Delhi	India	29
3	São Paulo	Brazil	7
4	Mumbai (Bombay)	India	29
5	Mexico City	Mexico	6
6	New York-Newark	USA	6

7	Shanghai	China	21
8	Kolkata (Calcutta)	India	29
9	Dhaka	Bangladesh	43
10	Karachi	Pakistan	43
11	Buenos Aires	Argentina	5
12	Los Angeles (including Long Beach-Santa Ana)	USA	7
13	Beijing	China	21
14	Rio de Janeiro	Brazil	6
15	Manila	Philippines	28
16	Osaka-Kobe	Japan	0
17	Cairo (Al-Qahirah)	Egypt	23
18	Lagos	Nigeria	49
19	Moscow (Moskva)	Russian Federation	1
20	Istanbul	Turkey	15
21	Paris	France	4

[Source: United Nations, “World Urbanization Prospects, the 2009 revision”, http://esa.un.org March 2010]

a. State which megacity is predicted to grow most rapidly. [1]

b. Describe the global distribution of the megacities listed in the table. [3]

c. Using examples, explain why some large urban areas have much higher population growth rates than others. [6]

d. “Sustainable strategies in cities can only succeed when cities have zero population growth.” Using examples, discuss this statement. [10]

Markscheme

a. Lagos (Nigeria).

b. Award ***[1 mark]*** for each statement made, up to ***[3 marks]***.

A listing, with no attempt to identify any pattern or overall distribution, may not be awarded more than ***[1 mark]***.

For example:

- there are many more (more than twice as many) megacities in Asia than in any other continent
- North America and South America each have three megacities
- Africa and Europe have fewer megacities than any other continent
- most megacities are in lower income countries.

Other valid distributional statements may be made.

c. Population growth in large urban areas is a result of (a) net migration and (b) natural population change. As a guideline, award up to ***[2 marks]*** for comments about in-migration, ***[2 marks]*** for comments about natural increase and ***[2 marks]*** for using valid examples. This balance may be adjusted for responses which are stronger on one component than the other.

For the full ***[6 marks]*** both components of population growth should be included alongside valid examples of urban areas with different rates of population growth.

d. Candidates are expected to have studied examples of management strategies of housing provision, pollution control and controlling in-migration.

In each case they are expected to be able to take an evaluative approach. They may use any or all of these to help support their answer.

In general, population growth in cities tends to negate the positive benefits of strategies designed to improve sustainability. Sustainable strategies attempt to alter numerous aspects of a city's system, so that, for example, energy and resource usage are reduced, waste disposal is reduced, green sources of energy are encouraged, air pollution is controlled and socially sustainable housing is readily available.

An answer which only considers sustainable strategies, for example Curitiba, without reference to population growth, should be limited to the C/D boundary.

Answers reaching band E are expected to consider how population growth tends to negate the benefits of sustainable strategies, and show some attempt at evaluation.

At band F there should be a well balanced attempt at evaluation.

Marks should be allocated according to the markbands.

Examiners report

a. [N/A]
b. [N/A]
c. [N/A]
d. [N/A]

---

a. With reference to urban environments, describe: [4]

(i) **one** type of centrifugal movement;

(ii) **one** type of centripetal movement.

b. Explain **two** features of the internal structure of the central business district (CBD). [6]

c. Evaluate the success of **two** different urban management strategies. [10]

Markscheme

a. (i) Centrifugal movements include suburbanization, counter-urbanization and urban sprawl **[1]** and the description should convey that this is an

outward movement of people **[1]**.

(ii) Centripetal movements include rural–urban migration, gentrification, re-urbanization/urban renewal **[1]** and the description should convey that this is an inward movement of people **[1]**.

b. Award **[1]** for each feature identified, and up to **[2]** for extended description and explanation (but must have some explanation for full marks).

For example: The centre/core of the CBD tends to have the tallest building/skyscrapers **[1]** in a city. This is because land prices are highest in the city centre **[1]** due to shortage of space/high demand for more central location/developers build upwards to create more retail/service space **[1]**.

Other possibilities include:

- internal zoning **[1]**: clustering of certain facilities and services in particular areas **[1]** *eg* high order retailing in the centre (core), services towards the edge (frame) **[1]**
- certain types of shops/services may cluster (clothing/jewellery/electronics) **[1]** due to the reputation that an area develops **[1]** and to allow consumers to comparative-shop **[1]**.

c. Management strategies can relate to:

- housing issues (quantity, quality – self-help, site and service, redevelopment, renewal, gentrification)
- population issues – migration control, population growth

- transport issues – congestion, air quality, greenhouse gas emissions, improvements to public transport
- employment – number and types of jobs
- service provision – access to education and health care
- environmental issues – air pollution, water pollution.

The successful funding and provision of measures can be credited as a self-evident sign of success. A more detailed evaluation of success might additionally provide actual data/evidence of any urban changes associated with the strategies (such as population, economic, pollution data).

Good answers may provide a structured examination of success that, in addition to the strengths and weaknesses of strategies, also considers how these may vary according to perspective of different groups of people (a sustainability approach might be adopted). Another approach might be to consider the time or spatial scale of any success (in some cases it may be too soon to judge what the legacy will be realistically). Another approach might be to provide a structured examination of how success varies for the two chosen places (which may well be cities in countries/contexts at different stages of development).

For band D, expect some description of two urban management strategies (do not expect balance).

At band E, expect either more detailed explanation of the strategies (do not expect balance) or a structured examination of their level of success (goes beyond simple success/failure and examines different perspectives/timescales/developmental contexts/*etc*).

At band F expect both of these elements.

Marks should be allocated according to the markbands.

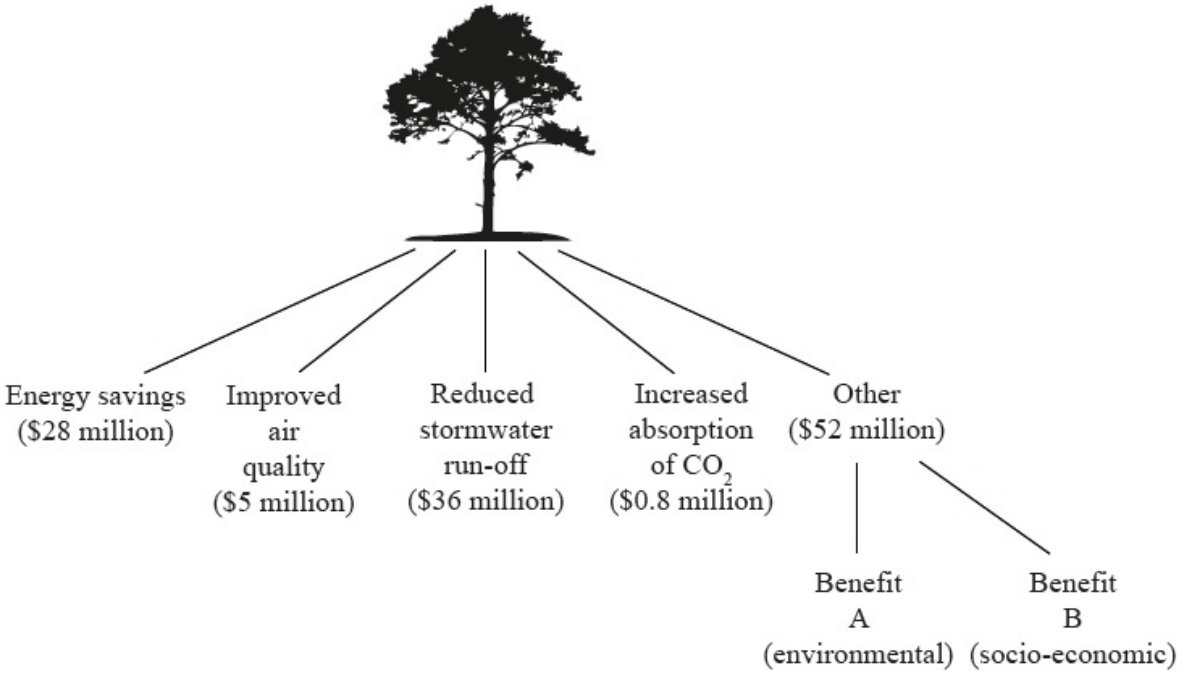
Examiners report

a. Quite well answered, although there was some confusion regarding the two types of movement. “Urbanization” was not credited for centripetal movement. Each type of movement must be developed to gain full marks.

b. There were some problems regarding understanding of the term “internal structure of the CBD”. Each feature needed to be developed/explained for full marks. Pedestrian numbers, and lack of residential housing, for example, are not structure.

c. This was quite well answered with effective use of examples. Note that the question referred to two different strategies – some candidates referred to different cities using similar strategies. Strong candidates showed good knowledge of some common case studies, eg Curitiba, but often knowledge was generalized. The weakest did not discuss strategies, but topics such as “suburbanization”. There was limited attempt to evaluate the success of management strategies.

The diagram shows the ways in which urban trees help to reduce environmental and social stress for the inhabitants of a major city. The numbers are the estimated annual value of the benefits, in US dollars (US$).



[Source: adapted from “Tree Count Results”; New York City Department of Parks & Recreation, 2006, http://www.nycgovparks.org]

a. Identify what Benefit A (environmental) and Benefit B (socio-economic) might be. [2]

b. (i) Define the term *urban ecological footprint*. [4]

(ii) Explain how **one** of the benefits named on the diagram (excluding “Other”) would reduce the city’s ecological footprint.

c. Explain how human activity in cities may result in an urban heat island effect. [4]

d. Examine the reasons why economic activities (such as retailing, service and/or manufacturing industries) sometimes change location within an urban area. [10]

Markscheme

a. A could be: improved wildlife/bird habitat; microclimate modification; increased biodiversity; reduced noise pollution.

B could be: recreational space; increased land/property values; increased community pride; less crime.

Accept other valid suggestions (for example, aesthetics, feelings, improved health, firewood/fuel).

b. (i) The theoretical measurement of the amount of land and water ***[1 mark]*** a population requires to produce the resources it consumes and to absorb its waste ***[1 mark]*** (under prevailing technology).

(ii) For example, energy savings: award ***[1 mark]*** for explaining how trees might lead to energy savings (due to reduced need for air conditioning in summer) and ***[1 mark]*** for relating this to a reduction in the resources/land area required to meet the lower energy needs.

c. Urban temperatures are higher than surrounding areas ***[1 mark]***. Further development of this definition, or applied use of an example, could merit another ***[1 mark]***, for example, mentions daily or annual variations in strength or has vertical and lateral components. Award up to ***[3 marks]*** for explaining how human activities (domestic cooling/heating, construction, transportation, industries, changes to nature of surfaces/albedo) help cause it.

d. Wide variety of possible approaches, depending on examples chosen. The causes of retail movements include shifts in population (for example, suburbanization), the changes in average age within an urban area (life cycle), location of employment opportunities, availability of land for "big-box" stores/superstores and out-of-town shopping centres, range of costs driving retailers out of CBD (including online competition), transport links, regeneration projects, gentrification, *etc*. Manufacturing movements may be influenced by land-use zoning, environmental considerations, proximity to labour, transport links and markets, *etc*.

At band D, candidates should be able to describe the changing location of economic activities in a named urban area.

At band E, locational changes should be explained for more than one type of activity and a range of reasons given.

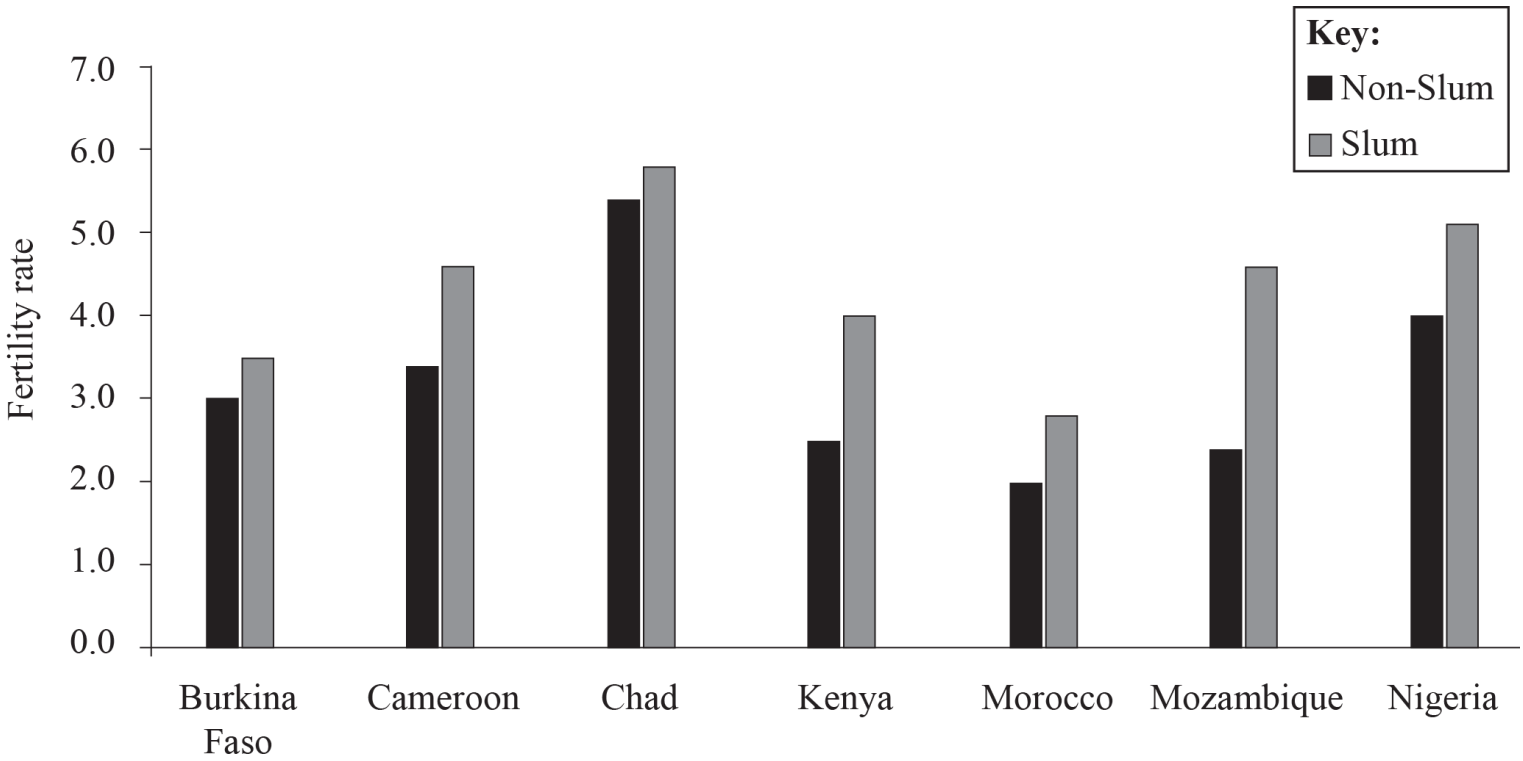
At band F there should be accurate and detailed knowledge and understanding, with well developed case studies.

Marks should be allocated according to the markbands.

Examiners report

a. [N/A]
b. [N/A]
c. [N/A]
d. [N/A]

The graph shows fertility rates in 2006 for slum and non-slum areas in various African countries. Fertility is an indicator of poverty.



[Source: adapted from *State of World Population* (2007), UNFPA]

a. Describe the differences in fertility shown on the graph. [4]

b. Explain **three** other social differences (other than fertility rates) between slum and non-slum populations. [2+2+

c. Evaluate the effectiveness of **one or more** strategies to control rapid city growth resulting from in-migration. [10]

Markscheme

a. Slum fertility rates are higher than non-slum fertility rates in all cases [1 mark]. Morocco has the lowest fertility rates in all categories [1 mark], while Chad has the highest [1 mark].

A maximum of 3 marks should be awarded for description with the remaining 1 mark reserved for quantification.

b. Possibilities include health, education, migrant status, ethnicity, age, language, religion, caste. Award 1 mark for each valid reason with an additional 1 mark for further explanation.

c. Answers will depend upon the strategies chosen and their location(s). Examples may include: vertical development, rural development schemes, development of satellite urban areas, government legislative controls, population control etc.

Good answers may recognize/quantify the scale of current urbanization trends and may conclude that no strategy (for example, new towns) can fully accommodate continuing in-migration.

Answers which do not have any evaluation should not proceed beyond band D.

Answers that do not make effective reference to examples or case studies are unlikely to go beyond band D.

Marks should be allocated according to the markbands.

Examiners report

a. This was well answered by almost all candidates.

b. This was well answered by almost all candidates, excepting for the occasional lapse into factors that were not social.

c. This elicited a wide range of quality in responses. The weakest focused on national-level population control measures of limited or no relevance.

Many of the strategies suggested, and the details of examples of cities where they had been tried, were unconvincing and failed to incorporate an evaluation.

---

a. State **four** main characteristics of a central business district (CBD). [4]

b. Explain the processes of gentrification and counter-urbanization. [6]

c. Contrast the causes and effects of air pollution for **two named** urban areas. [10]

Markscheme

a. Characteristics that can be outlined for ***[1 mark]*** each include:

- low residential population
- economic/tertiary activity (shops, offices, entertainment) found here
- at the centre of a settlement or at intersection of routes
- very high buildings especially at PLVI
- functional zoning of types of service
- vertical zoning *eg* offices above shops
- convenience shops at edges of CBD
- “Core and frame” structure
- evidence of zones of discard/assimilation

- high value pedestrian flows
- high traffic flows (or low if pedestrianized)
- there may be other valid points.

b. **Gentrification**

Explanatory points for ***[1 mark]*** each, to a maximum of ***[3 marks]*** include:

- usually seen as a centripetal/inwards movement
- more affluent people move in, displacing less affluent people
- house prices rise/there are home improvements
- incomers are looking for cheap properties for renovation (and profit)
- other pull factors include: vibrancy/authentic city life/proximity to CBD/work (do not over-credit multiple pull factors, as this is only one aspect of the process of change)
- broader neighbourhood changes as affluence rises *eg* restaurants
- credit other valid aspects of the process of change.

Counter-urbanization

Explanatory points for ***[1 mark]*** each, to a maximum of ***[3 marks]*** include:

- a centrifugal/outwards movement
- moving to new town/out-of-town village/commuter town near edge of town (but do not credit suburbs/suburbanization)
- can also be beyond the commuting zone *eg* remote rural areas
- age-selective process associated with retired migrants
- also may involve young families with children
- migrants are drawn by “quality of life”/environment, *etc* or pushed by high prices, crime *etc* (do not over-credit multiple push-pull factors, as this is only one aspect of the process of change)
- credit other valid aspects of the process of change.

c. *Credit all content in line with the markbands. Credit unexpected approaches wherever relevant.*

The most effective answers will be those that use properly contrasting examples such as two cities at contrasting levels of development (this approach is recommended in the guide, page 38).

Depending on the exact examples chosen, causes may include human factors (transport, industry, and domestic burning of coal, gas, paraffin) and physical factors (*eg* anti-cyclonic weather conditions).

The effects are likely to include impacts on health (impact of traffic in Mexico City), microclimate (lack of “blue sky days” in Beijing), biodiversity (decline of sensitive species *eg* lichen), weathering (especially of limestone buildings) and the costs for tourism (clean-up of polluted buildings, or the cost of lost tourism *eg* Chinese cities in 2012–13).

Good opportunities for making a contrast may be found by highlighting the different roles played by physical factors, governance, stages of economic development *etc* that pertain to the two chosen studies.

For band D, candidates must describe some causes and effects of air pollution and make some reference to two examples (balance between all of these elements is not expected at this level).

Band E should either provide greater exemplified detail of both causes and effects in both cities (with greater balance) or offer a more sustained and explicit contrast (but across a narrower range of ideas).

At band F, expect both elements.

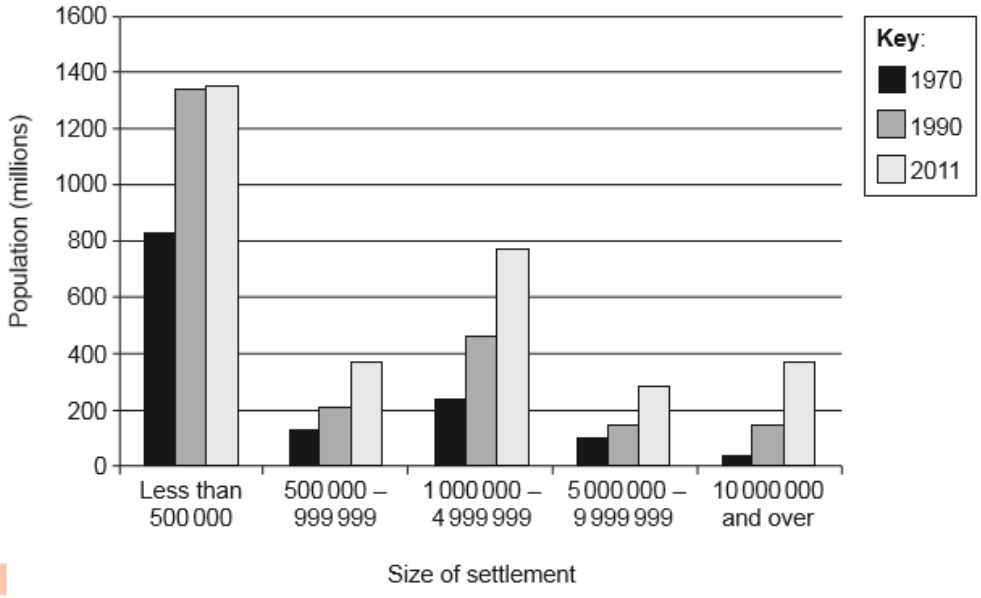
Examiners report

a. Good understanding was shown on the characteristics of a CBD.

b. Surprisingly only a few candidates could explain the processes of gentrification and counter-urbanization adequately to cover all the main points.

c. This question elicited some very weak responses. Most candidates could name two areas correctly but could not do justice to contrasting the causes and effects of air pollution. There were some general statements regarding air pollution but specific details were missing.

a. The graph shows the total population living in urban areas of different sizes, between 1970 and 2011. [4]



[Source: From UN Department of Economic and Social Affairs (DESA), Population Division (2012) *World Urbanization Prospects*, by Gerhard K. Heilig, © 2012 United Nations. Reprinted with the permission of the United Nations.]

(i) Estimate the number of people worldwide living in megacities (10 000 000 people and over) in 1990.

(ii) Describe changes in the total number of people living in small cities of less than 500 000 people.

b. Explain **two** characteristics of the distribution of **one named** economic activity within **one named** urban area. [6]

c. "Managing a city sustainably requires a wider range of strategies than those that only limit its ecological footprint." Discuss this statement. [10]

Markscheme

a. (i)

Accept responses within the range 130 million to 175 million.

(ii)

*Award **[1]** for each valid change and reserve **[1]** for quantification*.

For example:

- increased rapidly between 1970 and 1990 **[1]** by approximately 50 % **[1]**.
- increased very slowly from 1990 to 2011 **[1]**, to about 135 million **[1]**.

b. Economic activity can include manufacturing industries, retail and service industries. In some urban areas there are primary industries (mining towns).

Examples must be developed. For example, would need to identify locational features of the industry *eg* transport corridors, edge of town, close to the CBD, rather than a generic example such as the motor industry in Detroit.

*Award **[1]** for each characteristic identified, and a further **[2]** for an explanation of the features of the spatial distribution, up to a maximum of **[5]**; reserve the final **[1]** for the example of the urban area*.

*For example, retailing in Cardiff is concentrated in the CBD **[1]** due to accessibility **[1]** (transport), leading to a higher pedestrian flow **[1]**.*

c. Sustainable cities are those that seek to maintain and improve the quality of life for current and future urban dwellers. Ecological footprints are the theoretical measurement of the amount of land and water a population requires to produce the resources it consumes and to absorb its waste under prevailing technology.

There are many factors used in an ecological footprint calculation, which is a measure of the environmental impact/requirements of people:

- bioproductive (currently used) land such as farmland, gardens, pasture and managed forest
- bioproductive sea used for human consumption
- energy land – the amount of land that would be required to support renewable energy instead of non-renewable energy
- built land – land used for development such as roads and buildings
- biodiversity land – land required to support all of the non-human species
- non-productive land such as deserts is subtracted from the total land available.

Other aspects of sustainability may be social (housing quality, social equality, crime), economic (type of employment, employment, unemployment) and/or environmental (air, water, land resources).

Good responses are likely to discuss the definition of urban sustainability. They may refer to social indicators (the percentage of people in over-crowded conditions, crime rates, educational achievement/literacy levels, etc) or economic indicators (Gini coefficient and unemployment rates). Candidates may question whether all of the data can be collected or even whether it is possible to accurately measure ecological footprints. Ecological footprints are therefore only one part (albeit important) of the sustainable city.

Answers may draw from a number of examples – Curitiba, Masdar City, and Bedzed and/or from sustainable strategies for transport, housing management, in-migration.

At band D, responses are likely to describe urban ecological footprint management or another urban sustainability strategy.

At band E expect <u>either</u> a more detailed explanation of how ecological footprints and other strategies (at least one) are used to manage urban sustainability <u>or</u> a discussion of urban sustainability/issues in a more varied way.

At band F expect both.

Marks should be allocated according to the markbands.

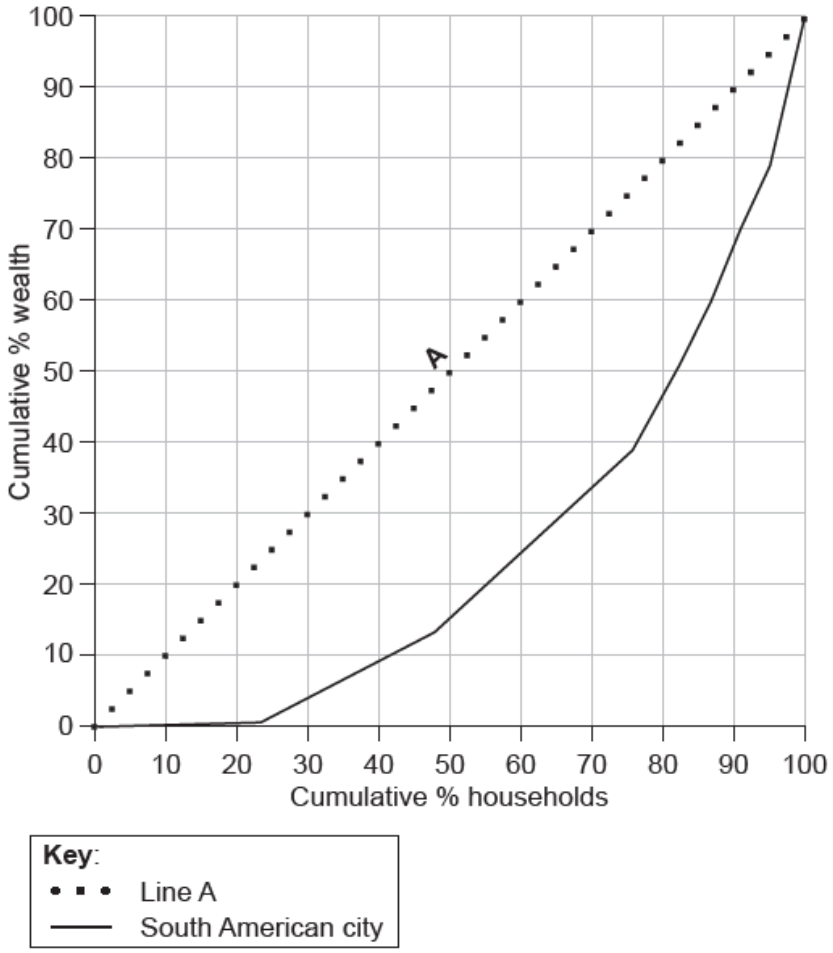
Examiners report

a. (i/ii) Few problems.

b. This question caused some difficulties. The term “economic activity” was sometimes weakly understood, and some failed to describe its distribution. Some referred to informal settlements.

c. Most responses discussed city sustainability, with limited reference to ecological footprint. Examples often referred to Curitiba and Masdar City. Sustainability focused on environmental rather than social and economic factors.

This Lorenz curve shows the distribution of wealth in a South American city.



[Source: © 2010. Lincoln Institute of Land Policy. Lorenz Curve of the Distribution of Residential Wealth by Housing Value Groups in Metro Rio, D Vetter *et al.*]

a.i. Describe what line A represents. [1]

a.ii. Estimate what percentage of the city's total wealth belongs to the wealthiest 10 % of households. [1]

a.iii. Referring to the graph, outline the evidence that many households in this city suffer from poverty. [2]

b.i. Explain why people's choice of residential location within a city might be influenced by their ethnicity. [3]

b.ii. Explain why people's choice of residential location within a city might be influenced by their family status (stage in lifecycle). [3]

c. Evaluate the success of **one** strategy designed to sustainably manage pollution in **one named** urban area. [10]

Markscheme

a.i. It shows equality in the distribution of wealth by households/a line of perfect equality **[1]**.

a.ii. 32 % (Allow 30–33%) **[1]**

a.iii. *Award **[1]** for valid evidence, and **[1]** for further development, including development of numerical evidence.*

For example: The 25 % of households that are least wealthy share less than 1 % of the wealth **[1]**. This means that many households will be living on very few dollars a day equivalent and struggling to survive **[1]**.

b.i. *Award **[1]** for a description of how residential areas vary in terms of ethnicity and a further **[2]** for development/exemplification of the reason(s).*

For example, in many cities, such as London, there are clusters of ethnic groups, such as South Koreans in New Malden **[1]**. Many Koreans choose to live there as there are Korean restaurants/supermarkets **[1]** as there is sufficient demand to support such specialist facilities **[1]**.

Ethnic groups may also be segregated for negative reasons, *eg* poverty or due to discrimination.

b.ii. *Award **[1]** for a description of how residential areas vary in terms of family status and a further **[2]** for development/exemplification of the reason(s).*

Family status refers to whether a person is single, married, married with children, and describes how their housing needs vary depending on the size of the family.

For example: In some countries, single people may live in more central areas **[1]** in rented accommodation close to work/entertainment/education **[1]** whereas married couples may move towards the quieter suburbs **[1]**.

c. Answers should refer to one named strategy, which can relate to one more types of urban pollution (atmospheric, noise, waste, water pollution, visual *etc*). The strategy may have multiple strands, *eg* integrated transport management, promotion of public transport, renewable forms of energy. The pollution management strategy could be part of a holistic approach to achieve sustainable development (circular systems)/reduce pollution, *eg* Beijing and the 2008 Olympic games.

Good candidates might evaluate success from different perspectives, *eg* businesses may resent costs of tackling pollution. Another approach might be to evaluate environmental and social benefits in relation to economic costs (making use of a sustainability framework). Another approach might be to evaluate the durability of any success (this depends on sustained political will, the ability to afford it/police it/perceived benefits).

At band D, expect a description of a pollution strategy in a named urban area.

At band E, expect either more detail or explanation of a pollution strategy in a named urban area, or an attempt to evaluate its success.

At band F, expect both.

Marks should be allocated according to the Paper 2 HL and SL markbands.

Examiners report

a.i. [N/A]
a.ii. [N/A]
a.iii. [N/A]
b.i. [N/A]
b.ii. [N/A]
c. [N/A]

---

a. (i) Define the term *suburbanization*. [4]

(ii) Briefly outline **two** possible **population** changes in an urban area where suburbanization is occurring.

b. Referring to **one or more named** cities, explain **two** ways in which humans affect urban air pollution. [6]

c. Examine the effects of the movement of services and manufacturing activities to new locations in cities. [10]

Markscheme

a. (i) Suburbanization is the outward growth of towns or cities **[1]** that leads to former villages or rural areas becoming urban **[1]**, or the movement of people to the rural–urban fringe **[1]**.

(ii) *Award **[1]** for each outlined population change (either to suburban or other affected area):*

- more people arrive in suburbs (newer housing)
- fewer people might be left in city centre
- lower density left in city centre

- older people in particular may move to (quieter) suburbs
- families in particular may move to (spacious) suburbs.

There are many other possibilities that can be credited.

b. Possible ways humans affect air pollution in urban areas include through transport emissions, burning of fossil fuels for energy production/domestic heating/commercial enterprises.

Equally, it is possible that human activities may reduce air pollution in urban areas, *eg* Beijing's relocation of iron and steel plants before the 2008 Olympics, the use of park and rides, Clean Air Acts, *etc*.

*In each case, award **[1]** either for the identification of a specific source of urban pollution in a named city or for a located pollution reduction strategy. In each case award up to **[2]** for the description and explanation of what the effect (positive or negative) has been.*

*Only award **[2]** in each case if no city named.*

For example: In Los Angeles, vehicles release nitrogen oxides **[1]**. NOx react in sunlight to form ground level ozone **[1]**. High levels of ground-level ozone form photochemical smog pollution **[1]**.

For example: In Paris 2014 the authorities introduced a policy to reduce the number of cars in the central area **[1]**. Cars with an odd-numbered number plate were allowed in certain days of the week whereas those with an even numbered-number plate were allowed in on the other days of the week **[1]**. This has reduced emissions of NOx, improving air quality **[1]**.

(Vehicle pollution includes NOx, CO, particulates and hydrocarbons; NOT carbon dioxide.)

c. Responses could consider the movement of economic activities into cities in developing/emerging economies; or the relocation movement from central areas to out of town/edge of town locations for well-established cities. There are also redevelopments in inner urban areas and some central areas of older cities, as a result of regeneration schemes. The movement of services (accept retailing) and manufacturing to new locations can have many effects: environmental, economic and social.

Socio-economic effects could be discussed, for instance changes in employment and social class structure, and associated neighbourhood changes.

Negative environmental effects may include increase in impermeable surface, poorer air quality due to the volume of people traveling to the new location. Effects may be highly damaging in newly-industrializing areas *eg* Pearl River Delta.

On the other hand, new business developments in post-industrial cities increasingly include landscaping, creation of new environments and a more varied habitat. There may also be environmental impacts in the post-industrial area which industry has left – at first dereliction and visual pollution of the environment; then urban succession; but longer-term improvements/landscaping may also occur.

Good answers may do more than explain/list different, unconnected effects. They may additionally examine the interrelations or the timescale of different effects, for instance by showing how economic impacts and social effects are linked. Another approach might be to examine what the effects are for cities at different stages of development, or for areas gaining/losing activity.

At band D, expect a description of some effects of relocations, or new economic activities, within one or more recognizable cities/types of city.

At band E, there should be <u>either</u> an explanation of a wider range of effects/movements <u>or</u> some critical examination of how cities/places/people are affected.

At band F, expect both.

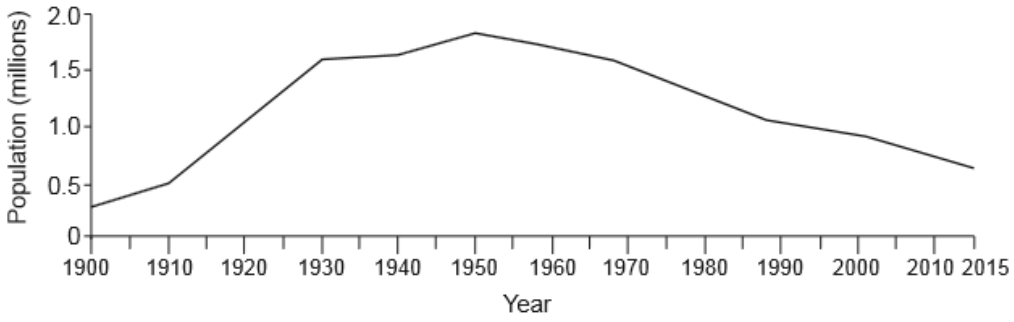
Marks should be allocated according to the markbands.

Examiners report

a. [N/A]
b. [N/A]
c. [N/A]

---

a. The graph shows population change in Detroit, a city in the USA. [4]



[Source: *The Economist*, July 2013]

Describe the changes in the size of Detroit's population between 1900 and 2015.

b. Using examples, explain **two** push factors and **one** pull factor that help explain counter-urbanization movements. [6]

c. Using examples, discuss the varied effects of human activity on urban microclimates. [10]

Markscheme

a. Award **[1]** for each of four valid statements, for example:

- Detroit's population increases between 1900 and 1950
- the most rapid growth was between 1910 and 1930
- the city's population has declined from its peak in 1950 until 2015
- in 2015 its population was the lowest it has been since about 1915.

There may be other valid descriptive statements.

*Maximum **[3]** if no quantification (must quote some data from y axis)*.

b. Counter-urbanization is the movement of population away from inner urban areas to a new town, a new estate, a commuter town or a village on the edge of just beyond the city limits/rural–urban fringe.

Counter-urbanization is influenced by many push and pull factors.

*Award **[1]** for the identification of a factor affecting counter-urbanization, and a further **[1]** for development, up to a maximum of **[5]**, reserving the final **[1]** for an example*.

Push factors include:

- the high price of urban living
- congestion in urban areas
- pollution
- lack of services
- declining employment opportunities
- social problems such as high crime rates.

Pull factors include:

- the perceived improved community relations
- better schools
- bigger houses
- cleaner environments
- space.

Accept other valid suggestions eg improvements in transport, improved ICT links enabling teleworking.

For example: High crime rates in Johannesburg **[1]** have led to many people leaving the inner urban areas for smaller areas/relocating **[1]**.

For example: Perceived high quality selective educational establishments in Tonbridge, Kent **[1]** have resulted in increased population in-migration **[1]**.

Do not credit both mirror statements eg poor housing/good housing used as two factors.

c. The effects of human activity on urban climates is varied *eg* urban heat islands, increased cloud cover and incidence of smog, increased instability, reduced snow cover, lower air pressure, increased tunnelling of winds, *ie* "the canyon effect", decreased relative humidity and so on.

The impacts depend on a number of factors: size of city, the function of the city (industrial versus post-industrial), land-use in the city (open spaces versus industrial/retail zones), population density, vehicle density.

In some cities, negative impacts of earlier urban development have been reversed by recent developments eg the Olympic Park in London, slum clearance in Barcelona to create La Rambla or the reintroduction of the Cheong-Gye-Cheon river in Seoul. These have led to reduced temperatures, reduced wind speeds, and increased humidity. Sustainable transport strategies may reduce the number of vehicles in city centres.

Good candidates may examine the scale of the city, improvements to a city's climate and the nature of the settlement. Good candidates should be able to explain specific aspects of the microclimate and relate it to named human activities (building, transport systems, power generation).

Responses at band D are likely to describe a limited range (at least two) of effects of human activity on microclimates.

At band E candidates will <u>either</u> discuss the effects in greater range/depth/types <u>or</u> provide some discussion of what "varied" might mean (eg negative/positive, planned/unplanned, varied locations).

At band F expect both.

Marks should be allocated according to the markbands.

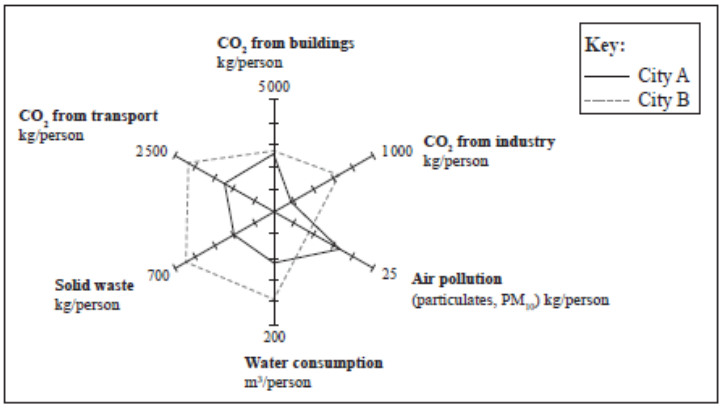
Examiners report

a. No problems.

b. Most understood the term counter-urbanization. Factors were correctly identified, but often not developed. Mirror points were not uncommon.

c. There were some good responses, focusing on heat islands, pollution and winds. Weaker candidates gave generalized accounts of pollution. There was a lot of misunderstanding of the role of pollution and CO_2 emission in the urban heat island effect. Few explicitly discussed the question.

The diagram shows the urban ecological footprint for two cities, A and B.



[Source: adapted from *Sustainable Urban Infrastructure: London Edition – a view to 2025* (2008), page 18]

a. (i) Define the term *urban ecological footprint.* [6]

(ii) Referring to the diagram, state which city has the larger urban ecological footprint and justify your choice.

b. Explain **two** ways in which urban air pollution can be reduced. [4]

c. Referring to examples, compare the patterns of formal and informal economic activities in urban areas. [10]

Markscheme

a. (i) The (theoretical) measurement of the land and water an urban area requires to produce the resources it consumes ***[1 mark]*** and to absorb its waste under prevailing technology ***[1 mark].***

(ii) City B has a larger footprint ***[1 mark].***

Although there is a similar value for CO_2 from buildings, City B is lower only in air pollution ***[1 mark]***. For all remaining values B has a higher reading ***[1 mark]***. Award ***[1 mark]*** for valid quantification, or any other valid reason.

b. There are many options including increased use of public transport; vehicle restrictions; congestion charging; car sharing/pooling; speed limit reductions; "park and ride" systems; introduction of filters in industrial chimneys; decreased use of coal and increased use of natural gas in industry and residential use; vehicle emission restrictions; use of electric vehicles; relocation or closure of polluting industries and power stations; government legislation; non-polluting public transport; alternative forms of energy.

For each way, award ***[1 mark]*** for the method and ***[1 mark]*** for the development.

c. Answers should distinguish between formal and informal activities. (Formal activities, whether in primary, secondary or tertiary sectors, have a salary, are registered and employees may pay tax and national insurance; informal activities are unregulated, unofficial, untaxed activities.) Both exist in all cities to varying degrees and any one individual may be involved in both.

Formal activities tend to be geographically concentrated in a number of locations including areas such as the CBD, ports, major transport arteries, retail parks, strip malls, industrial zones, and, increasingly, edge of town developments. Some activities, such as education, may be linked to residential areas. Some knowledge of the relevant location of these should be evident.

In contrast, informal activities are usually less geographically concentrated than formal activities, and more mobile, and are also found in a variety of locations.

They are especially common in shanty towns, inner city areas and low income areas *eg* selling food from kiosks, and in the CBD (street vendors, shoe shining) but also in higher income residential areas as cooks, gardeners, nannies, security personnel.

Some people live and work on refuse dumps, collecting and/or recycling discarded materials.

A variety of approaches is possible. Responses may refer to the pattern of activities in one or more cities or compare their relative patterns in cities in MEDCs and LEDCs.

Responses that do not refer to specific examples of cities or activities should be limited to band D.

For band D, aspects of both patterns should be described for a named place (*eg* key locations identified).

To access bands E and F, both patterns should be developed, with good comparisons made at band F.

Marks should be allocated according to the markbands.

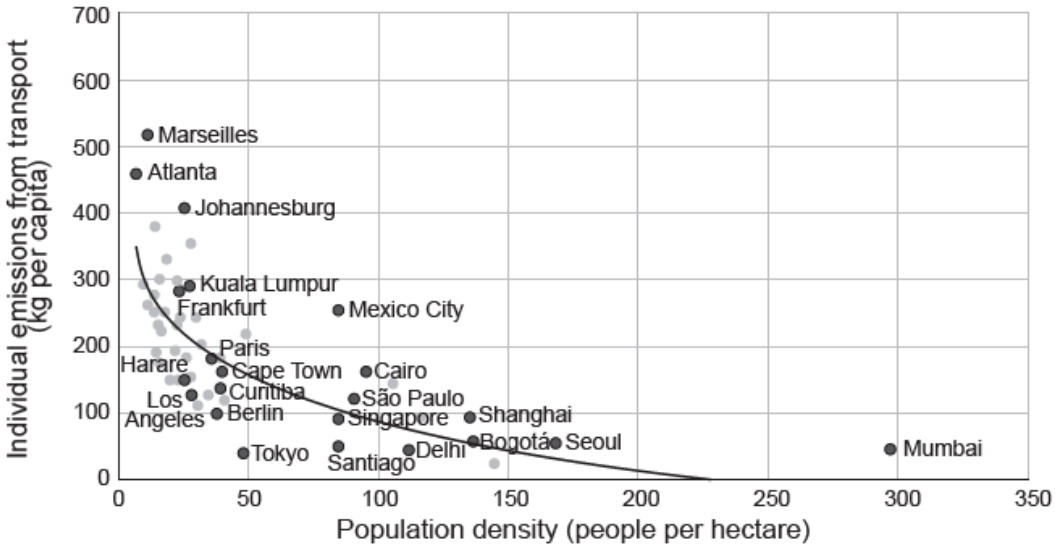
Examiners report

a. There were few problems.

b. Usually well answered. Some were a bit general, but conceptually sound.

c. This question proved to be a challenge to most candidates, and it was often poorly answered. There was limited understanding of formal and informal economic activities, some confusing formal/informal with professional/unskilled employment, and even less knowledge about their location patterns within urban areas. Many just wrote the advantages/disadvantages of the different economies. Answers did not look at patterns. This appears to be a neglected area of the syllabus and was probably the most difficult question on the paper for most.

The graph shows population density in cities and individual emissions from transport.



[Source: adapted from World Development Report, (2010), p. 210.]

a. (i) Describe the general relationship between population density and air pollution from transport. [4]

(ii) State why Mexico City could be considered an anomaly.

b. Referring to **one or more named** cities, explain **two** ways in which a circular city system operates. [6]

c. Examine the characteristics of urban deprivation in **one or more** cities you have studied. [10]

Markscheme

a. (i) Possible descriptions include:

- the relationship is negative / the lower the density, the higher the emissions **[1]**
- non-linear (or similar description) **[1]**
- exemplification using cities from the graph **[1]**
- Recognition of anomalies, such as Mexico City **[1]**.

*If no reference to data, maximum **[2]**.*

[3 marks]

(ii) Mexico City has much higher emissions than the other cities of similar densities / it is a long way from the best-fit line **[1]**.

[1 mark]

b. *Award up to **[3]** for any of the following explanations. Two inputs/outputs would be acceptable.*

Inputs are reduced/controlled **[1]** and these include energy/water/resources/food **[1]**, *eg* due to greater use of renewable energy in Masdar City UAE **[1]**.

Outputs are reduced/recycled **[1]** and these include waste/energy/noise **[1]**, *eg* Green Exchange in Curitiba (recyling scheme) **[1]**.

May provide supporting diagram **[1]**.

[6 marks]

c. The characteristics of urban deprivation are very varied and can take many forms – income inequality, single parents, long-term illnesses, unemployment, high residential densities, lack of access to sanitation/electricity, access to clean water, reduced access to fresh food and vegetables, reduced access to healthcare and education, *etc*.

Urban deprivation may be concentrated in inner cities, slums and shanty towns. Some deprivation may be found in areas near the edge of cities.

Some populations are more vulnerable than others – elderly, very young, migrants, unemployed. Social deprivation may lead to political unrest. It may also lead to community schemes to tackle deprivation, *eg* urban farms in Detroit, US.

A good account may be carefully structured around different interpretations of "characteristics", such as social indicators, spatial patterns, urban environment, *etc*.

At band D, expect a description of at least two aspects of urban deprivation.

At band E, expect either a more detailed explanation of urban deprivation or an attempt to examine a greater number of different aspects of urban deprivation.

At band F, expect both.

Marks should be allocated according to the markbands.

[10 marks]

Examiners report

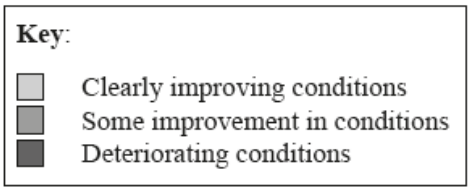
a.

b.

c.

The figure shows information about urban deprivation for selected low income regions of the world.

AFRICA			ASIA			LATIN AMERICA
Northern	Sub-Saharan	Eastern	Southeastern	Southern	Western	
Moderate proportion of slum dwellers	Very high proportion of slum dwellers	Moderate proportion of slum dwellers	High proportion of slum dwellers	High proportion of slum dwellers	Moderate proportion of slum dwellers	Moderate proportion of slum dwellers



[Source: ©International Baccalaureate Organization 2015]

a. Outline the pattern and trend shown in the figure. [4]

b. Explain **three** factors that influence the location of squatter settlements in urban areas. [6]

c. "The rapid city growth caused by in-migration can never be controlled." Discuss this statement, referring to **one or more** examples. [10]

Markscheme

a. Award up to ***[2 marks]*** for pattern, and up to ***[2 marks]*** for trend.

- all regions show moderate to very high proportions in the slums (pattern)
- with Sub-Saharan Africa worst affected (pattern)
- most areas show improvements taking place (trend)
- only Western Asia shows deterioration over time (trend).

Credit other significant points not covered by the markscheme. The actual words “pattern” and “trend” do not need to be used.

b. Award ***[1 mark]*** for each factor and a further ***[1 mark]*** for the development or exemplification.

Possible factors include: unoccupied land (at the city edge); transport routes such as roads, transport hubs such as bus stations/railway stations/airports; poor quality marginal land; proximity to work opportunities, (such as factories or higher class residential areas), refuse/waste tips, derelict sites, cheap land value. Accept other valid factors. For example:

- “Location near transport routes ***[1 mark]*** allows access to job opportunities in city centre ***[1 mark]***.”
- “Land at the edges of the city has nothing there so people build their own homes there ***[1 mark]***. There may be less risk of clearances by bulldozers if no-one else wants to use the land ***[1 mark]***.”

c. *Credit all content in line with the markbands. Credit unexpected approaches wherever relevant.*

Answers can discuss city-wide policies (such as migration restrictions through permits *eg* China’s migrant labour system, or policy refusal to expand the city *eg* green belt legislation, or tougher controls on squatter settlements at edges). This can be linked with the continuing challenge of in-migration/pressures on rural dwellers to leave their land and move to a city.

A discussion might compare the effectiveness of different controls in a single city, or controls adopted by two different cities. Either approach is fine when considering the veracity of the statement. A distinction might also be made between spatial growth (urban sprawl) and population growth (numbers). This could be the basis for a more thoughtful discussion.

Examples could include Shanghai, Mumbai, Mexico City, Cairo – most cities experiencing rapid in-migration are in NICs and LEDCs. Inappropriate examples (such as London) will need to be marked on their individual merit (an inappropriate case study may still be the basis for a creditable evaluation, perhaps band D).

For band D, candidates must describe in-migration/city growth and an attempt at migration control with some reference to one or more examples (balance between these elements is not expected at this level).

Band E should either provide greater exemplified detail of city growth/in-migration and the effectiveness of control measures or offer a more thoughtful discussion of the veracity of the statement (but with less factual support).

At band F, expect both elements.

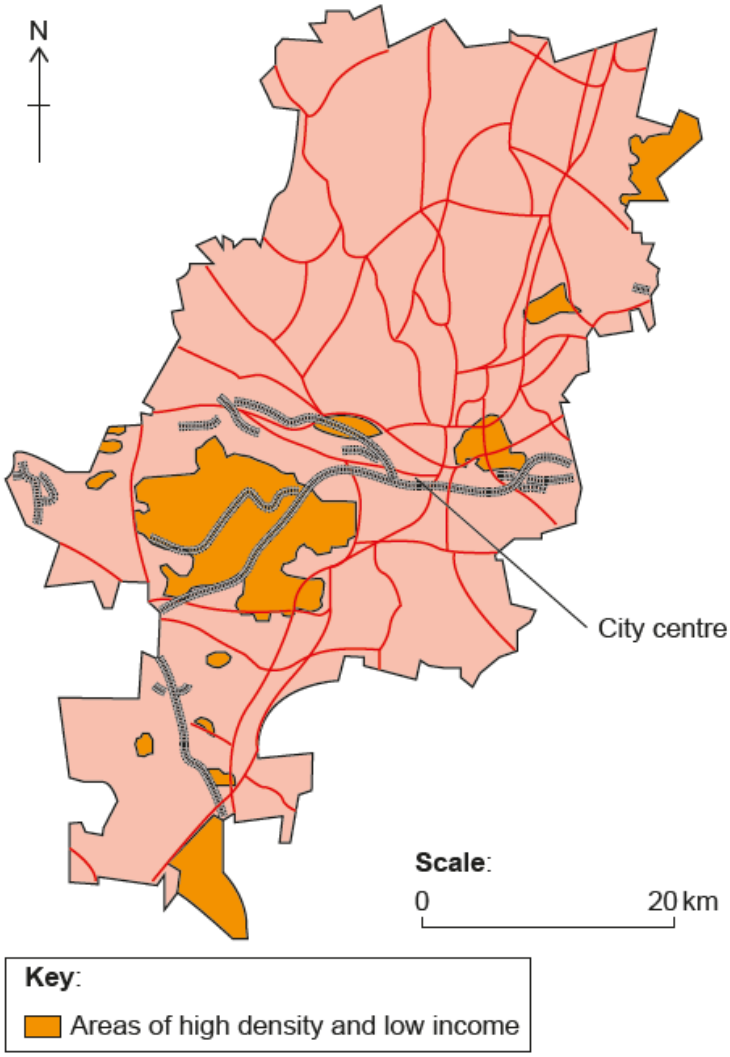
Examiners report

a. This was often not well done. It appeared candidates are not clear about the difference between pattern and trend.

b. Factors influencing location of squatter settlements were satisfactory but development or exemplification was less so. Some confused the term with squatting in disused buildings.

c. This caused difficulty for candidates as very few fully understood the question. The question was about controlling in-migration and not about controlling the effects of rapid city growth. The example of Curitiba was used, inappropriately, to show how rapid city growth could be managed in a sustainable manner. Others used migration controls into specific countries.

The map shows the distribution of the neighbourhoods in an African city with low incomes and high population density.



[Source: Adapted from P Guinness, *Johannesburg – a city of acute disparity*, Topic Eye A-Level Geography 2014–2015 edition, page 11, published by Cross Academe Limited.]

a.i. With reference to the map, describe the distribution of neighbourhoods with low incomes and high population density. [3]

a.ii. Outline **three** possible **economic** reasons for the location of neighbourhoods with low incomes and high population density in the urban area shown on the map. [3]

b. Analyse the contribution of natural change to population density patterns in urban areas. [4]

c. To what extent has **one named** housing management strategy been successful in creating a more sustainable city? [10]

Markscheme

a.i. *Award **[1]** for each valid description point, up to a maximum of **[3]**, which include the following*:

- the main location is to the south-west of the city centre **[1]**
- many of the remaining sites are towards the periphery of the city **[1]**
- there are many scattered small areas/pockets located in western/ south-western/eastern suburbs **[1]**
- some of the areas are more than 20 km from the city centre **[1]**.

a.ii. *Award **[1]** up to a maximum of **[3]** for the identification of each factor*:

• many of the areas are located close to where jobs are found **[1]**
• there are more informal jobs located in the city centre **[1]**
• the land is relatively cheap on the outskirts **[1]**
• many of the areas are close to important routeways **[1]**.

b. *Award **[1]** for each valid point, up to a maximum of **[4]**, which could include the following*:

• positive natural change occurs when the birth rate is higher than the death rate **[1]**
• this leads to an increase in population density **[1]**
• areas of youthful populations (including areas of in-migration) tend to experience positive natural change **[1]**
• negative natural change leads to a decrease in population density **[1]**
• areas of ageing populations tend to have lower population densities **[1]**.

Other contributing factors may be considered.

c. Housing management strategies include the provision of affordable and acceptable housing to all population groups, especially poorer ones. It

includes shanty towns, apartments, private and public rented accommodation, as well as

sustainable schemes such as Masdar City, BedZed, Curitiba. Features of housing management strategies include provision of loans, mortgages,

self-help schemes, recycling, energy reduction, re-use of resources, *etc*.

Sustainable cities are those that encourage reduction in energy use, reduction in inputs, recycling and re-use of waste products, as well as pollution management strategies and traffic management strategies. Other strategies may include sustainable economic and social strategies.

Good answers are likely to consider the advantages of housing management strategies that address affordability, quality (acceptability), and sustainability (water and energy recycling and re-use, for example). They may also consider the disadvantages (cost to residents and governments). They may also consider the spatial limitations (the strategy may be in one neighbourhood only, not the whole city), or other elements of sustainability *eg*, issues with pollution, in-migration and employment.

Answers may use a single case study or a range of strategies in one city. Good answers may recognize the limitations of achieving a sustainable city.

At band D, candidates should describe the characteristics of one housing management strategy.

At band E, expect <u>either</u> a more detailed explanation of one housing management strategy <u>or</u> an evaluation linked to sustainability.

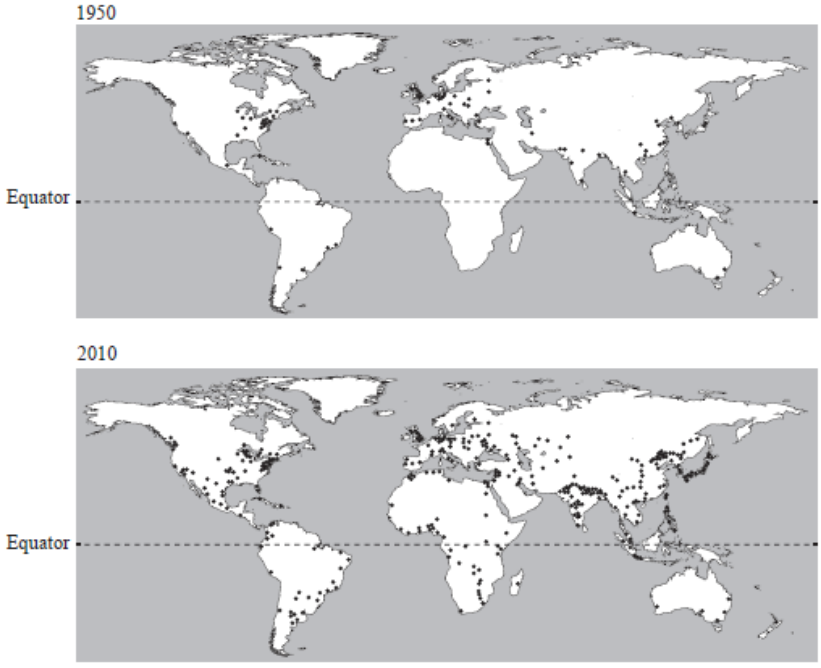
At band F, expect both.

Marks should be allocated according to the markbands.

Examiners report

a.i. [N/A]
a.ii. [N/A]
b. [N/A]
c. [N/A]

The two maps show millionaire cities (cities with at least 1 million inhabitants) in 1950 and 2010.



[Source: G Nagle, (2006), *Philips Interactive Modern School Atlas*, Philips Hodder Murray]

a. (i) Define the term *urbanization*. [4]

(ii) Describe the changes in the distribution of millionaire cities as shown on the maps.

b. Explain **three** reasons for the movement of **named** economic activities within urban areas. [6]

c. Examine the reasons why it is difficult to manage urban areas sustainably. [10]

Markscheme

a. (i) Urbanization is the increasing percentage/proportion of a country's population living in towns and cities. Accept alternative phrasing. Do not accept rural–urban migration.

(ii) Award ***[1 mark]*** each for:

- there are more millionaire cities in all continents
- major growth along coasts
- may identify regional clusters, *eg*, India, Japan
- makes a valid north–south contrast
- credit other valid points or attempt at quantification, *eg*, has risen from two to five in Australia, or uses phrasing to show very significant growth/more than doubled.

b. Possible economic activities include retail, services, manufacturing, leisure.

There are many possibilities:

- land values too high in CBD so shops/offices move to edge of town
- new attractions of new road/rail links attract a range of businesses
- business parks established in new areas with good accessibility
- brownfield site redevelopment for offices/shops may have advantages *eg*, cost
- enterprise zones/export processing zones have cost/benefits for light industries.

Award ***[1 mark]*** for each basic reason for movement (advantage should be clear) and ***[1 mark]*** for further explanation/exemplification. For example, services in Cardiff have relocated to the accessible Cardiff Gate business park ***[1 mark]*** which has much lower costs per square metre than the CBD ***[1 mark]***.

Award a maximum of ***[4 marks]*** if no economic activities are named.

c. Sustainability should be defined – good answers will acknowledge environmental/economic/social dimensions. Candidates may discuss aspects such as housing, population growth, pollution, transport, housing and employment. Contrasting case studies of sustainable urban management might be used. These may be drawn from high-income countries and low-income countries. Examples may include Curitiba, the London Olympics, Masdar City. Credit any valid example at any urban scale.

Reasons are likely to include:

- cost – *eg*, the cost of developing a new sustainable transport system, housing *etc*
- availability of money – this can operate at a household level/city government level *eg*, being able to afford solar panelling
- political will – corruption may be a problem in some locations/vote-catching/NIMBYism (people not wanting new developments such as a recycling scheme in their locality ("back-yard"))
- available technology – some debt-ridden cities may not be able to afford new forms of renewable energy, for example
- rapid population growth and rate of consumption of resources – over-consumption of resources as standards of living rise
- high population densities
- legislation – introduction of Agenda 21 statements
- waste output – encouraging people to re-use, recycle, reduce.

To access band D at least two reasons should be described.

At band E expect either a greater range or depth of reasons for management challenges (may offer contrasting examples) or some explicit examination of what sustainable management actually involves, and the challenge it brings.

At band F expect both.

Marks should be allocated according to the markbands.

Examiners report

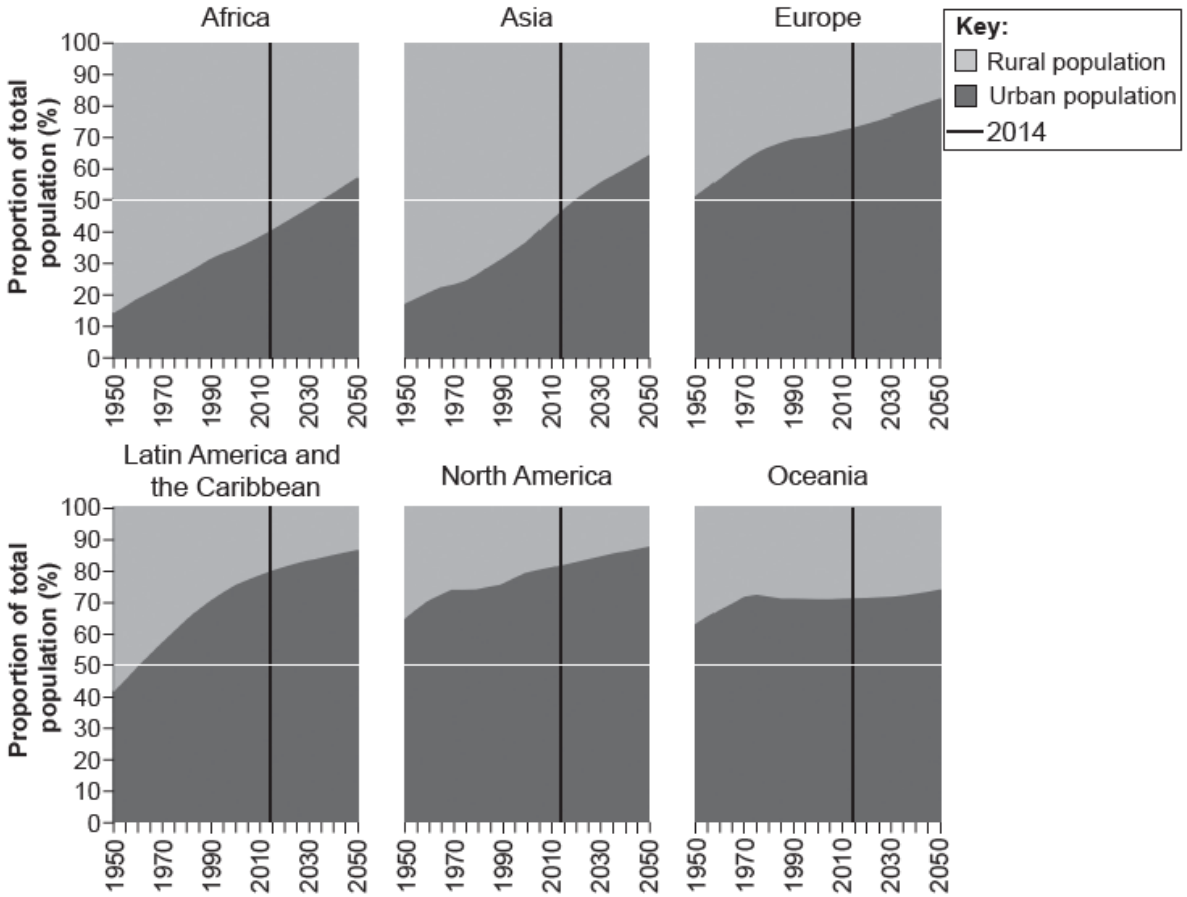
a. A substantial and worrying number of candidates could not define the term urbanization, often equating it merely with growth of cities and rural–urban migration.

The description of changes in distribution of millionaire cities was often well answered.

b. There were some good responses to this question, with candidates discussing suburbanization and gentrification. Weaker responses considered movement to/from large cities, including rural–urban migration, which is not relevant to movement within cities.

c. There were some very good responses regarding the sustainable management of urban areas, with case studies including Rio de Janeiro, Curitiba, and the London Olympics, showing a clear understanding of sustainability in cities, including diagrams, and an explicit examination of the challenges facing many cities. Weaker answers were often descriptive. Often, little attempt was made to define sustainability and as a consequence many answers degenerated into long-winded descriptions of recycling and reducing traffic in cities.

The graph shows rural and urban population as a proportion of total population for different regions from 1950 to 2050.



[Source: http://esa.un.org]

a. (i) Identify the region with the highest proportion of people living in urban areas in 2014. [4]

(ii) Identify the region with the lowest rate of urbanization between 1950 and 2050.

(iii) Describe the change in the proportion of people living in urban areas in Latin America and the Caribbean between 1950 and 2050.

b. Suggest **three** reasons why different ethnic groups are often concentrated in different parts of cities. [6]

c. Evaluate the success of **one** management strategy to tackle pollution in **one named** urban area. [10]

Markscheme

a. (i) North America **[1]**

[1 mark]

(ii) Oceania **[1]**

[1 mark]

(iii) *Award **[1]** for each valid point. Must have some quantification for **[2]**.*

The proportion increases rapidly between 1950 and about 2000 **[1]** (from 40% to around 70%).

It increases more slowly between 2000 and 2050 **[1]** (from about 70% to around 85%).

[2 marks]

b. *Award **[1]** for each reason identified and **[1]** for development/exemplification.*

For example: Due to greater availability of affordable/cheaper housing **[1]**, less affluent groups may become concentrated in poorer parts of the inner city (*eg* Bangladeshi in East End of London) **[1]**.

Other possibilities include:

- postive segregation – choosing to live in areas with an existing population due to more facilities, *eg* places of worship or family/community support, or speaking the same language
- negative segregation – avoiding areas where there may be potential conflict
- policies to segregate different ethnic groups
- work – employees grouped around work areas/industries
- historic factors
- relative wealth of migrants – rich and poor areas attract migrants of similar wealth.

[6 marks]

c. Answers should refer to one named strategy. The strategy may have multiple strands, *eg* integrated transport management, promotion of public transport, renewable forms of energy. The pollution management strategy could be part of a holistic approach to achieve sustainable development (circular systems)/reduce pollution, *eg* Beijing and the 2008 Olympic games.

Good candidates may evaluate by recognizing that the strategy may have benefits as well as costs. Benefits may be environmental and social (such as improvements in health) whereas costs may be economic. They may evaluate using a sustainability framework. The success of the strategy may depend on political will, the ability to afford it/police it/perceived benefits. There may be local benefits (such as reducing traffic/car parking) but wider increases in pollution. Good candidates may also view the strategy from different perspectives, *eg* businesses may resent costs of tackling pollution.

At band D, expect a description of a named management strategy.

At band E, expect <u>either</u> more detail or explanation of a named management strategy <u>or</u> an attempt to evaluate its success.

At band F, expect both.

Marks should be allocated according to the markscheme.

[10 marks]

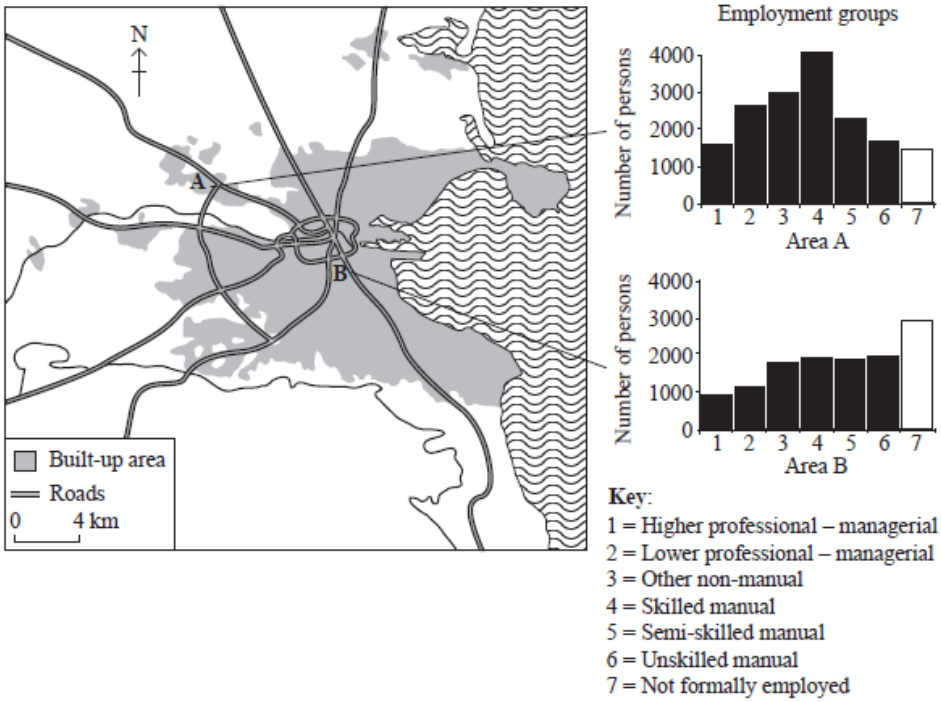
Examiners report

a.

b.

c.

The map and graphs show employment characteristics for the populations of two contrasting areas of Dublin, Ireland. Area A is a new residential area on the edge of Dublin whereas Area B is an inner city location.



[Source: adapted from A Maclaren, (1993), *Dublin*, page 174]

a. (i) Identify **one** group of working people that have been classified as "not formally employed". [4]

(ii) Distinguish between the main employment characteristics for the two areas shown.

b. Explain **two** population movements taking place **within** large cities. [6]

c. "Most large cities suffer from a serious problem of urban poverty for which there is no solution." Discuss this statement. [10]

Markscheme

a. (i) People in the informal sector. Also accept charity work, carers, criminal activity or specified groups of informal workers *eg*, car windscreen cleaners.

(ii) Award ***[1 mark]*** for any of the following, up to ***[3 marks]***:

- area A has most people in "skilled manual"/category 4
- area B has most people in "not formally employed"/category 7
- area B has an even spread across groups 3–6/different types of manual work
- area A has a high category 2–3/lower professional groups
- credit other valid significant points, or attempts at quantification.

b. For each population movement, award ***[1 mark]*** for the identification of a population movement and ***[2 marks]*** for reasons explaining why the movement occurs. These can be outlined push or pull factors, but do not double-credit "mirrored" reasons (*eg*, less space in inner city, more space out of town).

A range of answers are possible, for example:

- the movement of families with children from the inner city to the suburbs ***[1 mark]***
- due to push factors such as pollution from traffic ***[1 mark]***
- the pull factors such as better education opportunities ***[1 mark]***.

c. There are many problems related to poverty that candidates can use. These include deprivation, overcrowding, poor quality housing, crime and inequality. Candidates may agree or disagree with the statement. Likely contrasts will be made between high-income countries and low-income countries.

Urban poverty and deprivation can take many forms – unemployment and underemployment, poor diet, lack of clean water. Solutions may be very costly, and there might not be the political will to invest resources on the most deprived. Overcrowding can lead to pressure on resources (water, sanitation) and it may help spread disease. Solutions include new housing developments, site and service schemes, provision of piped water and improved sanitation.

Solutions could include informal/shanty towns, new towns, new cities, affordable housing, rural development. The fundamental problem is that as long as cities are attractive places for people to live and work, they will continue to attract more people, thereby making it difficult to solve the problem of poverty.

Credit answers that argue that urban poverty can be resolved (Curitiba, economic growth in China, India pulling people out of poverty).

At band D, responses are likely to describe either some urban problems or one or more possible solutions. Evidence may be generalized or lacking.

At band E, expect either a greater range of problems and/or solutions to be covered or some explicit discussion of the truth of the statement (*eg*, recognizes the urban context determines the severity of the problem and/or the solutions sought).

At band F, expect both.

Marks should be allocated according to the markbands.

Examiners report

a. This question posed few problems, although weaker responses tended to name “Group 7” rather than a specific group of people. Most candidates were able to successfully distinguish between the employment characteristics for the two areas, using quantification.

b. This was a popular question with some very good responses and effective use of case studies. Many described problems of poverty in cities in both high-income and low-income countries, put forward possible solutions and discussed their effectiveness. Weaker responses were merely generalized descriptions of urban problems.

c. This was a popular question with some very good responses and effective use of case studies. Many described problems of poverty in cities in both high-income and low-income countries, put forward possible solutions and discussed their effectiveness. Weaker responses were merely generalized descriptions of urban problems.

The photograph shows part of the informal sector of the economy in King William’s Town, South Africa.

[Source: copyright International Baccalaureate Organization, 2015]

a. Using photographic evidence, outline **two** characteristics of the informal sector of the economy in King William's Town. [4]

b. Referring to examples, explain **two** factors that influence the location of megacities. [6]

c. "Sustainable urban management is desirable but impossible to achieve." Discuss this statement, using examples. [10]

Markscheme

a. *For each case, award **[1]** for identifying a characteristic and **[1]** for development of the point.*

For example:

- it is located on the side of a road/close to a bus park **[1]** – the best locations to locate are close to highly accessible areas such as bus parks/stations **[1]**
- the people are selling goods on the side of the road **[1]** because they cannot afford to own/rent a shop/premises **[1]**
- it is small-scale **[1]** – they can only bring what they can carry so the amount of goods is limited **[1]**
- they appear to be mainly selling food/fruit/vegetables **[1]** – they can only afford to buy and re-sell cheap goods/some may grow the food on their own land-holdings **[1]**.

b. *Award **[1]** for identifying a factor and **[2]** for further exemplification/explanation. Factors may be physical (eg coastal location/river valleys) and/or socio-economic (eg tax-free zones/free-trade areas/areas of rapid industrialization).*

For example: Many of the world's megacities, such as Shanghai and Mumbai, are located in coastal areas/large river valleys **[1]** as this increases the potential for trade and commerce **[1]**. Coastal areas are also more favourable for industrial development as they are able to import raw materials and finished products more competitively than inland areas/landlocked countries **[1]**.

*Award up to a maximum of **[4]** if no or only inappropriate examples are given.*

c. Sustainable urban management can have an economic, social or environmental focus, and ideally all three. Good answers may comment on this or discuss the interrelationships that exist. Alternatively, candidates may approach the question using linear and circular urban systems.

There are a number of sustainable urban strategies *eg* recycling, re-use, reduce, sustainable forms of transport, urban agriculture, sustainable forms of energy *etc*. Some of these may be small-scale *eg* Bedzed in south-west London, whereas others are much larger in scale *eg* Curitiba, Brazil or Masdar City, UAE. Good answers are likely to present the achievements and limitations of two strategies.

Good answers may discuss external/long-term issues affecting the sustainable management of urban areas *eg* the context of continuing population growth/rural–urban movement. Another approach might be to discuss the veracity of the statement for different place contexts (cities in countries at different stages of development). Another approach might be to discuss how some strands of sustainability (social/housing) could be easier to achieve than others (ecological footprint minimization).

At band D, expect some description of a limited range of urban problems, or sustainable strategies, or the drawbacks to sustainability schemes.

At band E, expect <u>either</u> greater explanation of the strengths and weaknesses of at least one sustainable strategy (and a second strategy outlined), <u>or</u> some critical discussion of why sustainable urban management is hard to achieve.

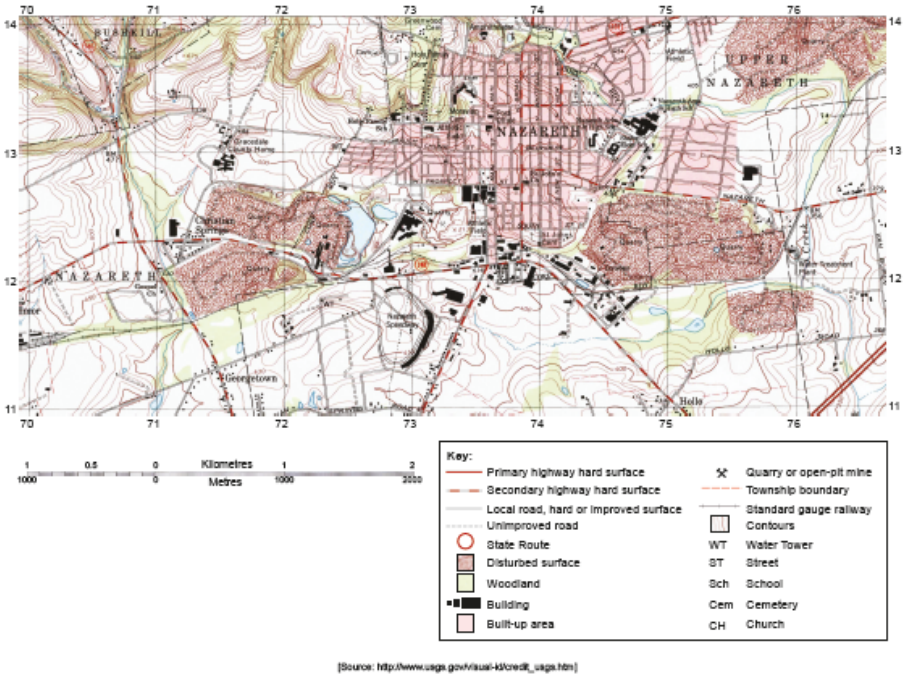
At band F, expect both.

Marks should be allocated according to the markbands.

Examiners report

a. [N/A]
b. [N/A]
c. [N/A]

The map shows Nazareth, an urban area in Pennsylvania, USA. The scale of the map is 1:24 000.



[Source: http://www.usgs.gov/visual-id/credit_usgs.html]

a. (i) Identify the economic activities located at 760122 **and** 736133. [4]

(ii) State **two** reasons for the location of the sports stadium (Nazareth Speedway) in 7211.

b. Referring to map evidence, explain **three** likely types of urban stress in Nazareth. [6]

c. Using **one or more** examples, examine the social **and** economic impacts of in-migration on cities. [10]

Markscheme

a. (i) Water treatment plant

Post office

(ii) Award **[1]** for each of the following, up to a maximum of **[2]**:

- more space available
- cheaper land values
- away from residential areas so less of a problem from noise
- relatively flat land
- access by highway.

b. Award **[1]** for identifying a valid type of urban stress and **[1]** for map evidence.

The most likely types of stress for which there is map evidence are:

- pollution (credit different types of pollution, *eg* noise pollution, air pollution from the quarry in 7312)
- potential congestion due to grid street pattern in the centre of town
- depletion of green space due to expansion of quarries/increase of built-up area (*eg* 7512).

There may be other types of urban stress and these should be credited if valid.

c. Possible impacts include:

- social urban problems – a youthful population; potentially high birth rates, poverty, spread of diseases, over-crowded schools, housing, ethnic conflict
- economic urban problems – unemployment, underemployment, low wages
- economic benefits – labour supply for employers, larger market
- social benefits – more schools, more hospitals (than in rural areas), ethnic/cultural diversity
- management as an impact/response to the issue.

Both social and economic must be addressed, but do not expect balance.

Good answers may provide a structured examination of the impacts that, in addition to positive and negative impacts, also considers how these may vary according to perspective of different groups of people. Another approach might be to consider the time or spatial scale of any impacts. Another approach might be to provide a structured examination of how impacts might vary for differing places/cities at different stages of development/different approaches to urban governance.

For band D, expect some description of some social and/or economic impacts of in-migration for a named urban area.

At band E, expect either more detailed explanation of some social and economic impacts (do not expect balance) or a structured examination of some variety of impacts (perspectives/scale/time) for people/places.

At band F expect both of these elements.

Marks should be allocated according to the markbands.

Examiners report

a. (i) This posed relatively few problems. Six-figure grid references were used to pinpoint the activities with precision.

(ii) This was generally well answered.

b. Generally quite well answered, with candidates referring, for example, to noise and air pollution from the quarries, or congestion due to the grid street pattern. However, weak reference to map evidence was common, as was reference to urban stress that could not have been identified from the map.

c. This question elicited some good responses and was quite well answered, with use of detailed and relevant case studies. Good answers looked at differing impacts in different cities. However there were many very unstructured responses in which it was difficult to follow the impacts. Very weak answers discussed migration into a country, or the impacts on the losing region.